AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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THE COW-DOCTOR.—*Drawn and Engraved for the American Agriculturist.*

The above picture tells its own story. A traveling cow-doctor has come across a credulous, ignorant farmer, who has a sick cow; the farmer is one of a kind which we are glad to say is becoming rarer, though such still exist; this style of farmer never reads the papers, and is ready to believe anything that a glib-tongued, loud-talking quack may tell him. Perhaps the poor animal has been fed on straw or corn-stalks, and has passed the winter in a cold, uncomfortable shed, and shows by her tight skin, her arched back, her rough coat, and miserable appearance that she has been neglected. Careful nursing is all she needs, but that is too simple a remedy, and the cow-doctor, who knows nothing but what he has learned from an ancient "Farrier's Guide," makes the farmer believe that his cow has some dangerous disease. A pailful of filthy mixture is poured down the cow's throat, and she is ordered to be blanketed and bedded comfortably, and fed with a warm mash, or some boiled oats. Some of the best hay is procured for her, and by and by she recovers. Of course, the physic and the cow-doctor get the credit of the cure, while the better food and care, which really deserve it, get none. But if, as often occurs, the cow dies in consequence of the dose, the result is laid to the disease, and not to the quack. Farm animals are naturally free from disease, if properly fed and cared for. Sickness and accidents will rarely happen on a well-ordered farm. Good food, and plenty of it, clean, warm stables, pure water given frequently, and not much at a time, at least a weekly, but better a daily carding of the skin, a daily modicum of salt, and no physic at all, will be effective in keeping stock in good health. If, in spite of care, an animal is ailing, a bran mash or drink of warm gruel, and a few days rest will generally make all right. If not, it is best to apply to a practiced and educated veterinary surgeon, or to the family doctor for advice, but never to the village cow-doctor, who is generally an ignorant person, and more likely to kill than to cure.

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Binding Harvester.—"H. & B.," Walnut, Iowa. We know of no harvester that binds the sheaves with sufficient success to make it a desirable machine. There are binding harvesters that are in course of being perfected, but at present they are chiefly experimental machines.

To Keep Eggs.—"M.," Joanna Station," Pa. The most cleanly method of preserving eggs, and one as effective as any other, is to smear them with cotton-seed or linseed oil, and pack them, with the large end down, in dry bran, or wheat or oat chaff, (not cut straw,) in a barrel, pressing the whole down closely, and heading the barrel. Kept in a dry, cool cellar, they will remain in good order for six months, if the shell has been clean and thoroughly well oiled.

Calendar for June.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	T	4 26	7 30	2 36	4 32	7 24	2 39	4 37	7 19	2 42
2	W	4 25	7 31	3 7	4 31	7 25	3 11	4 37	7 19	3 16
3	T	4 25	7 32	sets	4 31	7 26	sets	4 36	7 20	sets
4	F	4 24	7 32	9 0	4 30	7 26	8 53	4 36	7 20	8 45
5	S	4 24	7 33	10 00	4 30	7 27	9 53	4 35	7 21	9 45
6	S	4 23	7 33	11 1	4 29	7 27	10 55	4 35	7 21	10 48
7	M	4 23	7 34	11 30	4 29	7 28	11 25	4 35	7 22	11 20
8	T	4 23	7 35	11 58	4 29	7 29	11 55	4 35	7 23	11 51
9	W	4 22	7 35	morn	4 28	7 29	morn	4 31	7 23	morn
10	T	4 22	7 36	0 23	4 28	7 30	0 20	4 31	7 24	0 18
11	F	4 22	7 36	0 44	4 28	7 30	0 43	4 34	7 24	0 42
12	S	4 22	7 37	1 3	4 28	7 31	1 3	4 34	7 25	1 3
13	S	4 22	7 37	1 21	4 28	7 31	1 22	4 34	7 25	1 24
14	M	4 22	7 38	1 41	4 28	7 32	1 43	4 34	7 26	1 46
15	T	4 22	7 38	2 2	4 28	7 32	2 6	4 34	7 26	2 11
16	W	4 22	7 38	2 27	4 28	7 32	2 32	4 34	7 26	2 37
17	T	4 22	7 39	3 0	4 28	7 33	3 6	4 34	7 27	3 12
18	F	4 22	7 39	rises	4 28	7 33	rises	4 34	7 27	rises
19	S	4 22	7 39	8 50	4 28	7 33	8 43	4 34	7 27	8 36
20	S	4 22	7 39	9 35	4 28	7 33	9 28	4 34	7 27	9 21
21	M	4 23	7 39	10 8	4 29	7 34	10 3	4 35	7 28	9 57
22	T	4 23	7 39	10 38	4 29	7 34	10 34	4 35	7 28	10 30
23	W	4 23	7 40	11 3	4 29	7 34	11 0	4 35	7 28	10 7
24	T	4 23	7 40	11 26	4 29	7 34	11 24	4 35	7 28	11 22
25	F	4 23	7 40	11 48	4 29	7 34	11 47	4 35	7 29	11 47
26	S	4 23	7 40	morn	4 29	7 35	morn	4 35	7 29	morn
27	S	4 24	7 40	0 9	4 30	7 35	0 10	4 36	7 29	0 11
28	M	4 24	7 40	0 33	4 30	7 35	0 35	4 36	7 29	6 38
29	T	4 24	7 40	1 1	4 30	7 35	1 5	4 36	7 29	1 9
30	W	4 24	7 40	1 38	4 31	7 35	1 43	4 37	7 29	1 49

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
New M'n	3	5 37 ev.	5 25 ev.	5 13 ev.	5 1 ev.	4 31 ev.
1st Quart	10	8 11 ev.	2 59 ev.	2 47 ev.	2 35 ev.	2 5 ev.
Full M'n	18	7 12 ev.	7 0 ev.	6 48 ev.	6 36 ev.	6 6 ev.
3d Quart.	26	9 55 mo.	9 43 mo.	9 31 mo	9 19 mo	8 49 mo.

AMERICAN AGRICULTURIST.

NEW YORK, JUNE, 1875.

The present is the latest season for many years. As usual in late seasons we have had a forcible lesson in regard to drainage. Drained fields have been plowed and planted two weeks earlier than undrained ones, and vegetation is quicker upon these dryer and warmer soils. The skillful farmer who takes advantage of every means of improving and enriching his farm, is to a great extent independent of seasons, while another in an unfavorable spring is for a long time prevented from working. This makes all the difference between a good and a poor crop, or even a good crop and none at all. With low prices for most farm products, we must increase our production to the acre, or we must go behind. As in all other occupations, there are in farming those who gain and those who lose. Those who gain are those who save at both ends, they raise large crops, and so dispose of them as to make them realize the utmost—the men, in fact, who farm with brains. The other class begin this late season with less hope than ever. They feel the pressure of hard times while others escape it. There is no help for it but to change their method of farming, to become skilled in their art, to drain where draining is needed; to plow more carefully; to cultivate more cleanly; to husband every one of their resources, to stop every leak, and to be patient and persevere in the right direction.

Hints about Work.

The Corn Crop.—Corn may still be planted and make a good crop. By choosing an early kind, it may, in most localities, be safe to plant up to the middle of the month. The use of 150 lbs. of guano or dried blood manure per acre, or a handful scattered about each hill, and frequent use of the Thomas harrow, Share's horse-hoe, or some other implement that will stir the surface close up to the rows, will advance the growth greatly. If planted by hand, soaking the seed before planting, will hasten the germination, and save a few days. If the seed is to be dropped by a corn-planter, it will not do to soak it previously, as the revolving cups will crush the soft grains. Whatever will promote a vigorous and healthy growth, should be practised.

Fodder Corn may be planted on ground that cannot be made ready in time for the main crop. Late corn planted in drills 30 inches apart, with 10 or 12 grains to the foot in the drill, and some active fertilizer scattered near the seed, but not in contact with, will bring a large quantity of valuable fodder.

Potatoes may yet be planted, but the later the crop, the more work there will be to save it from the Colorado potato beetle. Have on hand a supply of Paris green, ready for the first appearance of the beetles; see article on page 226. One pound will be sufficient for an acre. Cultivate well and keep free from weeds; this is the secret in raising not only good crops, but a good quality of tubers.

Ruta-bagas.—It is as easy to raise 800 bushels of these to the acre, as it is to raise 400 bushels. It depends mainly on the preparation of the ground. The after culture for a large crop costs no more than that for a small one. Rich, mellow, clean soil, is necessary for a good crop. 250 lbs. per acre of superphosphate, or fine done-dust scattered in the drill, will greatly help the young plants. But large crops of roots can not be had without good barn-yard manure as the basis. Sow 2 lbs. of good seed; if it is not fresh, and can not be depended upon, use 4 lbs. per acre in drills 30 inches apart, up to the middle of the month. The soil *must be fine and mellow.* When the fly or "flea" appears, dust the young plants with air slacked lime. To prepare it, as soon as the seed is sown, put a bushel of fresh lime in an open shed, and sprinkle it lightly with water. It will slack to a fine dry powder by the time the plants need it. An ounce of carbolic acid in the water will be a great help in keeping off insects. Thin out the plants to 12 inches apart, as soon as they are established.

Weeds.—No quarter must be given. They must be killed as soon as they appear. Myriads may be killed before they are visible, by the use of the harrow and cultivator. Shallow cultivation is better than deep, as the weeds are left on the surface, where the sun kills them at once. When very young, they have little strength to resist. Early and frequent cultivation will save much hand-labor hereafter. While crops are young, the Thomas harrow is a most effective cultivator.

Beans are a fallow crop. They are not exhaustive, and the necessary cultivation and hoeing will kill the weeds. They are a profitable crop if well managed. They may be planted this month, in rows 27 to 30 inches apart, dropping three or four beans in hills one foot distant from each other in the rows. Cover not less than two inches deep. Plaster is a good fertilizer for beans.

Haying.—Clover hay to be of the best quality, should be cut this month, unless the lateness of the season interferes. The crop should be cut at least as soon as half the blossoms appear; the advantages of early cutting are well shown in Prof. Atwater's article on page 213. The hay should be cured in the cock, and kept by itself in the barn, for young stock and milking cows next winter. Orchard grass should be cut in early blossom, or it will be poor hay. No grass suffers so much from late cutting as this.

Hay Caps are inexpensive. They need not be more than a yard square, costing only 15 cents each. A hundred will cover 10 tons of hay. By using them the hay may be left out safely until a whole field is down and ready to draw into the barn. "Atlantic A," or a yard wide sheeting of the same quality, is the best cloth for caps.

The Mower.—See that the mower is in proper order, all bolts and nuts screwed up tightly; the gearing greased with tallow and black lead; all the bearings clean and kept well oiled; and the knives sharp. Take one of the emery harvest sharpeners into the field, and while the team is resting, touch up the edges of the knives. A sharp knife or scythe makes easy and clean work. It will pay to have a mower even where there is but 10 acres of hay to cut each year, if proper care of it is taken.

Mares and Colts.—Brood mares should not be worked when near foaling. Light work which is no more than moderate exercise, is proper and healthful for them. Give the mare a good roomy box all to herself, with plenty of bedding, and leave her alone. After the foal is dropped, half a

pail full of warm oatmeal gruel will be useful, and if the foal needs assistance, it should be given. Nine or fifteen days afterwards the mare may be taken to the horse. Choose a well built sound stallion, but especially a docile, gentle, and well tempered one. These qualities are reproduced in the colt with great certainty. Never breed from a spavined, ringboned mare. These defects are hereditary, and are thus perpetuated.

Ewes and Lambs.—Ewes from which early lambs have been taken, may be fattened very quickly. Give a pound of corn meal or oilcake meal, even when on good pasture. Keep sheep from swamps, ponds and streams. Water from springs or wells, given in wooden troughs, is the best for them. A handful of crushed oats and corn or bran, will force the lambs along, and nursing ewes should not be forgotten in the distribution. Give salt from the hand once a week, which will make the flock gentle and familiar with their owner.

Swine should by all means have a run at grass, or in a clover field. Pigs are scarce this season, and pork will probably be a profitable thing to have on hand by and by. See article on ringing, page 220.

Sundry Matters.—Wash sheep three or four days before shearing; "tag" before washing, and dip them and the lambs afterward. See article on page 221. Give calves a little scalded bran or oats daily. Force all young animals judiciously, so as to keep them in vigorous growth, but not fat. Plow odd pieces of land that have not been planted, to be sown hereafter with buckwheat or turnips. Clean out the barns, and whitewash them inside. Return all tools, implements, etc., to their places when they have been used, and make hoes, cultivator teeth, spades, and other tools sharp on the grindstone, and keep them so. Remember a workman is known by the condition of his tools, and a sharp tool does good and quick work. Read hints for last month again.

Work in the Horticultural Departments.

Early vegetables and small fruits are ordinarily by this time well advanced, but the cold, late spring has, at least in northern localities, retarded all crops. It is not yet too late to sow seeds of most vegetables for medium and late crops. There should always be several plantings of all quick growing vegetables, to secure a succession throughout the summer. Weeds will be the common enemy to every gardener, and if the best results are wished for, the cultivator, hoe, rake, and other implements must be used constantly. Never allow weeds to become large enough to require hand pulling, as this takes time which can be more profitably used in some other way. Yellow docks, and plants, the roots of which retain their vitality, should be removed at plowing time and burned, else they will be sure to grow, as will purslane, or "pussley," unless raked up and fed to the pigs.

Orchard and Nursery.

The main thing now is to keep the soil loose and free from weeds around the trees and between the rows. If the rows of small fruits are far enough apart to admit a horse and cultivator, the weeds can be killed in much less time than if the hoe and rake only can be used. In using a plow or cultivator among trees, care must be taken not to bark the trunks or break the lower branches; to avoid this, the end of the whiffle-tree should be protected with a thick covering of cloth, and the trace chains covered with leather.

Insects must be destroyed as they appear. Tent caterpillar nests should be taken off either at morning or at night, when they are all in one cluster, and either crushed or burned. Wild cherry trees are favorite breeding places for these insects, and some orchardists prefer to leave them around their orchards as a trap, thinking that caterpillars often resort to these in preference to the fruit trees. So far as we have observed there have been caterpillars enough for both the wild cherry trees and the fruit trees in the orchard.

Young Trees should be mulched, especially if planted last spring. By the judicious rubbing off of young shoots, a young tree may be brought into proper shape, and avoid much pruning.

Slugs are often so numerous as to injure the foliage of the cherry, pear and other fruit trees; lime or ashes dusted upon them, will destroy them; even dry road-dust has been successfully used.

Borers may be prevented from doing injury, by placing a strip of paper for a foot or more around the lower part of the trunk, and allowing its lower edge to reach an inch or so beneath the surface soil. The female insects usually appear this month. Some rub the lower part of the trunk with a corn cob, to destroy the eggs.

Seed Beds must be kept weeded. Young seedling evergreens must be shaded, and during dry, hot weather, the beds watered occasionally.

Grafts set last month, must be looked to, and where shoots appear on the stock to rob the graft, they should be rubbed off, so that all the nourishment may go to the graft.

Pruning.—June is one of the best months in which to prune, but it is the season at which few can spare the time. The wounds should be covered with shellac varnish, or melted grafting wax.

Fruit Garden.

Grapes.—Tie up the young shoots as fast as they grow; if allowed to become too long, there is great danger of breaking. Soft cotton twine, without starch, is the best and cheapest material. Thin out the fruit on vines just coming into bearing. Apply a top-dressing of ground bones or ashes to the soil between the vines, if not already done; stimulating manures must be avoided.

Strawberries.—Mulch as soon as the fruit sets, either with leaves, or cut straw, or hay; if applied liberally, very few weeds will show their heads above it. If plants are wanted to set new beds, sufficient runners may be allowed to grow, if not, cut off as fast as they appear.

Currants.—Cultivate the soil between the rows often, unless the ground is heavily mulched.

Raspberries and Blackberries.—The new canes should be tied up to stakes as soon as they are long enough, otherwise a high wind or driving storm may break them off. Leave only three or four canes to grow to each stool, and shorten them when 4 feet high for raspberries, and 5 feet for blackberries.

Gooseberries are more profitable when marketed in the green state, and should be picked as soon as large enough for use. If mildew appears, use sulphur freely.

Thinning fruit pays in increasing both size and quality, and if practiced judiciously, will prove profitable, and with young trees just coming into bearing, is often absolutely necessary.

Kitchen Garden.

Too much can not be said on keeping the soil free from weeds, and allowing none to go to seed. Extra care in cultivation, will tell in a few years in the diminished crops of these pests of the garden. If it were only known how easy young weeds may be destroyed, we should hear fewer inquiries how to get rid of this or that weed after it has taken possession of the soil. A scratch of the rake at the proper time, will kill weeds that later require a spade for their removal.

Asparagus.—Do not cut after peas have become plenty, as the roots need time to recover from the exhaustion of continued cutting. If there is well rotted manure on hand, it will pay to give a dressing before the tops are allowed to grow. Keep the beds free from weeds until the tops shade it.

Beans.—Plant bush sorts for a succession. It is not yet too late for Limas, if put in at once. Keep the early plantings free from weeds, and provide poles for the running varieties.

Beets and Carrots require thinning as soon as large enough to handle; the young beets make capital greens.

Cabbages of the early plantings will be ready this month for use or market, and the ground may be made ready for celery or other late crops, as soon as cleared. Set out plants of the late sorts from the seed bed. Cut worms and the more common cabbage worms must be watched and destroyed as soon as they appear.

Celery.—Thin out the seed bed, and transplant into good soil, until wanted for setting out permanently. July is early enough for the main crop.

Corn.—Sow every week or ten days until July; sown even as late as the middle of that month, with a remarkably warm fall, a good crop may be had until late frosts come. If more than enough for family use is planted, dry the surplus for winter.

Cucumbers.—Hoe and weed the early plantings, and sow for pickles; the young plants must be kept free from insects, by the use of covers of netting, or a liberal sprinkling of ashes and plaster upon the leaves when wet.

Egg Plants must not be set until the ground is well warmed, and all danger of frost is past; then give them a good, rich soil, and hoe often; if watered occasionally with liquid manure, they will produce extra large fruit.

Lettuce, unless the plants can have shade during a portion of the day at least, they soon run to seed; the north side of a fence or building is the best place for the summer crop.

Melons of all kinds should be planted at once, if not already done, and the same precautions taken to destroy insects, as recommended for cucumbers.

Onions.—Weed and thin. Near city markets it pays best to sell onions before they are ripe.

Parsnips.—Thin before the plants become too large, and cultivate between the rows, until the leaves are large enough to cover the ground.

Peas rarely do well when planted at this late season. If tried, cover at least four inches with earth in planting; as soon as up and hoed, give brush. Clear off the ground from which the early plantings have been gathered, and set cabbages or other plants.

Radishes are hardly worth growing at this season, as they seldom come tender.

Rhubarb.—Do not exhaust the roots by too late pulling. Cut the flower-stalks as soon as they appear.

New Zealand Spinach is the best for summer use, and should be planted in hills three feet apart, but not until the weather is warm; the Round Leaved soon goes to seed, when planted late.

Salsify and *Scorzonera* must be treated the same as parsnips; thin to three inches in the row.

Squashes.—Treat the same as melons and cucumbers, and keep clear of weeds.

Sweet Potatoes.—If not set, do it at once, and plant in well manured ridges, three feet apart.

Tomatoes.—Set out early this month, and give supports of some kind to the vines, otherwise there will be danger of rotting. Many plans of trellises have been given in previous numbers.

Turnips.—Sow the Ruta-baga kinds this month; the black fly will seldom do much damage at this season; if the insects appear, use road-dust or ashes upon the leaves when wet.

Flower Garden and Lawn.

Annuals, sown in the open ground the first of June, in northern localities, do better than when planted earlier, as the ground is seldom warm enough for the most rapid growth before this time.

Bulbs of Hyacinths, Tulips, and other autumn-planted bulbs, may be taken up, and stored in a dry place, and the beds occupied with annuals or bedding plants. Set out Tuberoses and Gladioluses, which have been started in the greenhouse or window, after the weather becomes warm.

Lilies should be kept carefully weeded, and the flower-stalks tied to stakes.

Cannas do best when started in the greenhouse, and then planted out. If dry roots are planted, it takes much longer to make a fine show with them.

Ricinus.—Single plants make a fine appearance,

and especially some of the larger varieties are worth growing, when there is room.

Climbers.—See that supports are provided for all climbing plants, and those that do not climb by tendrils or otherwise, should be tied with soft twine.

Dahlias need stakes to support the flower-stalks, as soon as they appear.

Perennials.—Seedlings should be transplanted and shaded for a few days, until well established. Those having tall, weak stems, will require stakes.

Lawn.—Cut the grass every week, and do *not* remove it, as it serves as a protection to the roots, and also as a fertilizer. Grass near trees must be cut with a grass-hook in order not to injure the tree.

Edgings, if of grass, must be cut and trimmed as often as necessary; probably once a month will be often enough to keep them looking well. The edging-knife should be thrust down far enough to cut off all grass-roots, which grow into the beds or walks below the surface.

Seeds of biennials and perennials do best when sown as soon as ripe. Sow in shallow boxes, set in a frame, where a little shade can be given, either with boughs or lattice-work. Usually the plants will be large enough to transplant in the fall or the following spring.

Greenhouse and Window Plants.

The plants in a window may be kept looking finely during the summer, with proper attention to watering and shading during the middle of the day. The plants should be showered overhead occasionally; those with thick leaves should have the dust removed with a soft sponge.

Window Boxes that have been inside during the winter, may be used for decorating the porch or piazza during the summer; these, as well as hanging baskets, ought to have an abundance of water. Outside window boxes, or balcony-gardens, must not be allowed to dry out.

Bedding Plants must not be set out before the nights become warm, and the soil dry, otherwise they will get a check from which it will take a long time to recover.

Bulbs that have done flowering, may be taken out of the pots, and stored in a dry place.

Greenhouse.—This will look bare, if all the plants are taken out, as was formerly the custom. This stripping of the house is needless, as a perpetual show of flowers may be enjoyed, if a little care is exercised in the selection of varieties; besides there are many plants which do not grow well in the open ground, but which do well under glass. Do not omit the weekly smoking of the houses, to kill the green fly and other insects, nor the showering overhead, to kill the red spider. Also admit plenty of air, except during cold storms.

Camellias and *Azaleas* may be taken out of doors, and protected from the sun by a shade of lattice-work. This is much better than allowing them to remain in the greenhouse, where they are injured by too much sun.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending May 13th, 1875, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	294,228	817,000	1,628,000	33,000	239,000	861,000
26 d's *last* m'th	242,700	601,200	1,782,000	9,000	207,000	529,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	356,000	1,921,000	2,709,000	64,500	138,000	1,814,000
26 d's *last* m'th	397,000	2,910,000	2,686,000	61,000	315,000	1,763,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1875	294,228	817,000	1,628,000	33,000	239,000	861,000
25 days 1874	299,000	2,519,000	2,167,000	24,000	49,000	804,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1875	356,000	1,921,000	2,709,000	64,500	138,000	1,814,000
25 days 1874	294,000	2,306,000	2,684,000	47,000	317,000	1,739,000

3. *Stock of grain in store at New York.*

	Wheat.	*Corn.*	*Rye.*	*Barley.*	*Oats.*	*Malt.*
	bush.	bush.	bush.	bush.	bush.	bush.
May 11, 1875	980,804	1,542,924	16,124	16,737	545,709	220,055
Apr. 9, 1875	1,701,029	2,594,967	37,231	101,961	798,389	194,771
Jan. 11, 1875	3,675,122	1,049,900	50,889	191,470	877,014	145,617
Dec. 7, 1874	4,518,906	1,220,978	15,925	168,391	880,899	135,022
Nov. 9, 1874	3,690,141	1,727,540	19,123	147,185	794,722	135,882
May 11, 1874	325,331	34,003	25,880	49,125	26,567	40,939

4. *Exports from New York, Jan. 1 to May 10.*

	Flour.	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*	*Peas.*
	bbls.	bush.	bush.	bush.	bush.	bush.	bush.
1875	633,286	5,535,389	4,176,173	47,415	165	38,122	175,663
1874	782,059	9,309,705	5,515,551	352,373	—	45,113	158,947
1873	392,997	1,485,326	3,965,331	49,700	11,830	10,604	24,152
1872	—	236,732	2,380,246	4,425,213	208,000	9,300	12,388
1871	—	670,952	3,499,703	1,600,576	17,338	67,903	13,777
1870	—	633,515	4,003,651	119,022	6,709	—	1,089
1869	—	357,389	2,645,940	1,173,233	—	—	33,583
1868	—	319,202	1,708,175	2,909,014	153,093	—	36,469

CURRENT WHOLESALE PRICES.

	April 13. 115 3-8			May 13. 115 1-2		
PRICE OF GOLD						
FLOUR—Super to Extra State	$4 60	@	6 00	$4 85	@	6 10
Super to Extra Southern	4 60	@	8 00	5 00	@	8 50
Extra Western	5 00	@	8 25	5 20	@	8 50
Extra Genesee	5 40	@	6 75	5 50	@	7 25
Superfine Western	4 60	@	5 00	4 85	@	5 20
RYE FLOUR	4 25	@	5 25	4 35	@	5 50
CORN-MEAL	3 90	@	4 80	4 00	@	4 80
WHEAT—All kinds of White	1 30	@	1 42½	1 40	@	1 47½
All kinds of Red and Amber	1 15	@	1 32½	1 15	@	1 43
CORN—Yellow	94	@	96	89	@	90
Mixed	93	@	95	87½	@	92½
White	94	@	96	89	@	90
OATS—Western	72	@	77	75	@	78½
State	73	@	77	75	@	78½
RYE	95	@	1 07	1 00	@	1 09
BARLEY	1 15	@	1 50	1 25	@	1 55
HAY—Bale, ₱ 100 lbs	65	@	1 05	60	@	1 10
STRAW, ₱ 100 lbs	50	@	85	45	@	80
COTTON—Middlings, ₱ lb	16⅜	@	17	16¾	@	16½
HOPS—Crop of 1874, ₱ lb	28	@	45	28	@	45
FEATHERS—Live Geese, ₱ lb	33	@	55	33	@	60
SEED—Clover, ₱ lb	11¼	@	11¾	11½	@	12¼
Timothy, ₱ bushel	2 55	@	2 85	2 55	@	2 75
Flax, ₱ bushel	2 10	@	2 35	2 00	@	2 20
SUGAR—Refi'g & Grocery ₱ lb	7	@	9¼	7¼	@	9¼
MOLASSES, Cuba, ₱ gal	40	@	45	37	@	46
New Orleans, ₱ gal	65	@	77½	70	@	76
COFFEE—Rio (Gold)	15¾	@	18¾	16	@	19
TOBACCO, Kentucky, &c., ₱ lb	10	@	28	10	@	28
Seed Leaf, ₱ lb	7	@	55	7	@	55
WOOL—Domestic Fleece, ₱ lb	30	@	64	28	@	62½
Domestic, pulled, ₱ lb	30	@	50	25	@	50
California, clip	15	@	34	15	@	33
TALLOW, ₱ lb	8¾	@	8¾	8¾	@	9¼
OIL-CAKE—₱ ton	45 00	@	47 50	44 50	@	48 50
PORK—Mess, ₱ barrel	22 25	@	—	21 90	@	22 15
Prime Mess, ₱ barrel	19 75	@	20 00	19 50	@	19 75
BEEF—Plain mess	10 50	@	—	10 00	@	—
LARD, in trcs. & barrels, ₱ lb	15	@	15¾	14¾	@	15¾
BUTTER—State, ₱ lb	15	@	30	15	@	30
Western, ₱ lb	12	@	25	12	@	24
CHEESE	5	@	16¾	4	@	15½
BEANS—₱ bushel	1 50	@	3 00	1 50	@	3 10
PEAS—Canada, free, ₱ bu	1 15	@	—	1 19	@	—
EGGS—Fresh, ₱ dozen	25	@	26	15¾	@	17
POULTRY—Fowls	15	@	24	16	@	26
Turkeys—₱ lb	16	@	22	17	@	23
Geese, ₱ pair	1 25	@	2 00	1 00	@	2 25
Ducks, ₱ pair	70	@	1 12	75	@	1 00
PIGEONS, ₱ pair	75	@	1 00	1 00	@	1 75
WILD DUCKS, ₱ pair	50	@	1 25	—	@	—
PLOVER, ₱ dozen	—	@	—	1 25	@	1 37
SNIPE, per dozen	—	@	—	30	@	1 37
TURNIPS ₱ bbl	1 25	@	1 75	1 75	@	2 00
CABBAGES—₱ 100	5 00	@	11 00	—	@	—
ONIONS—₱ bbl	1 75	@	4 00	50	@	1 00
ONIONS, new Bermuda, crate	—	@	—	1 00	@	1 25
POTATOES—₱ bbl	1 62½	@	2 50	2 00	@	2 75
SWEET POTATOES—₱ bbl	3 00	@	3 75	3 00	@	4 00
BROOM-CORN	10	@	16	9	@	15
POTATOES, new Bermuda, bbl	—	@	—	7 50	@	—
ASPARAGUS, ₱ doz. bunches	—	@	—	2 00	@	5 00
RADISHES, ₱ 100 bunches	—	@	—	1 00	@	—
STRAWBERRIES, ₱ quart	—	@	—	25	@	40
APPLES—₱ barrel	75	@	2 00	1 00	@	2 50
CRANBERRIES—₱ bbl	2 25	@	9 50	—	@	—
GREEN PEAS, ₱ bushel	2 25	@	2 50	—	@	—
GREEN PEAS, ₱ crate	6 00	@	—	2 25	@	2 75
TOMATOES, ₱ crate	2 50	@	—	80	@	1 00
SPINACH, ₱ bbl	—	@	—	4 00	@	4 50
KALE, ₱ bbl	—	@	—	2 00	@	—

Gold has been up to 116, and down to 114¾, closing May 12th at 115½, as against 115⅜ on April 12th.....The offerings of most kinds of Breadstuffs, afloat and from store, have been much lighter, and higher prices have been claimed, especially in view of the unfavorable weather, and the reports of injuries by the severe and unseasonable cold to the crop of winter wheat. The demand, however, has not been remarkably active, either for home use or shipment, at the ruling figures, though the export movement has been favored by unusual depression in ocean freights. Toward the close, Wheat was pressed for sale, and quoted lower, influenced, in part, by more liberal offerings of Spring, for June arrivals. Considerable quantities of Canada Club Wheat, in bond, to arrive on the opening of canal navigation, have been also offered within the week ending with May 13th, for which the nominal asking price was $1.30 per bushel, but lower rates would be accepted. It was found difficult, however, to elicit bids from export buyers, as these operators were apprehensive of an adverse turn in ocean freights. Corn, Rye, and Oats closed with more firmness, in view of the reduced supplies available. Rye was particularly scarce and wanted for shipment to the Continent, as well as for milling. Prime Oats were offered very sparingly, and some speculative demand was noted....Provisions have been less active, opening more firmly, but closing generally cheaper. Butter left off rather more steadily, with prime to strictly choice makes in limited stock. Cheese was unusually depressed, and difficult to place, in any considerable amounts. Eggs declined materially....Cotton has been very freely dealt in, especially on speculative account, but at reduced quotations....Tobacco has been in fair request at essentially unchanged rates....Hops have been quiet, but held with firmness....Seeds have been dull and weak....Hay and Straw have been rather more sought after at quoted rates....Petroleum and Naval Stores have been depressed and quoted cheaper, on slow movements....Wool has been in comparatively moderate demand, but without important alteration as to values. The inquiry for manufacturing purposes has been quite limited. Supplies have been offering with comparative freedom, in most instances, at late rates. Buyers have not been disposed to operate to any considerable extent in the local market, pending the receipt of more liberal amounts of new clip. From the interior there have been very few advices received thus far, indicative of the probable opening figures for the new clip; but the experiences of the past season would seem to lead to the opinion on the part of buyers that it will not be advantageous to operate at prices any higher than those of last year, and even at those rates that the new clip is not likely to pass freely into consumption, in view of the extreme dullness of the market for domestic woolens. On the other hand, producers are not eager to accept bids short of asking figures, which are represented as ruling generally somewhat above the opening quotations of last year. Some sales of fleece wool, on sheep's back, have been reported in the interior @ 50c. per lb. for combing stock.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Total.*
April 19	8,693	77	2,270	19,669	30,606	61,315
April 26	10,269	183	3,374	24,743	35,427	73,996
May 3	8,775	73	3,364	13,900	25,612	51,524
May 10	9,411	90	3,000	17,543	32,883	62,927
Total for 4 Weeks	36,948	423	12,008	75,855	124,528	249,762
do. *for prev. 4 Weeks*	32,159	509	4,635	72,568	95,803	205,674
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	
Average per Week	9,237	106	3,002	18,964	31,132	
do. do. *last Month*	8,049	127	1,159	18,142	23,950	
do. do. *prev's Month*	7,185	100	619	21,892	26,051	

Beeves.—The months' business opened with an advance of ½c. ₱ lb., on a brisk market. The hopeful feeling was soon lost, and large receipts altered the tone of the market considerably. Losses of $5 @ $6 ₱ head, were made on most of the stock, except extra, which remained firm. Dealers who lost no more than $50 a car load, were well pleased, and a poor market was the rule to the end. At the close the market was dull, with a strong downward tendency, and sales were made at a loss on western stock. A few selections went at 13¼ @ 13½c. ₱ lb., to dress 58 lbs. to the cwt.; common to prime natives sold at 10 @ 12½c. ₱ lb., to dress 56 to 58 lbs. Rough oxen brought 9½c., to dress 55 lbs., and fat bulls sold for 5c. ₱ lb. live weight. A reduction in the cost of western stock, is the only hope for dealers here, as prices can not be advanced in this market. A year ago extra cattle were sold here at 12¼ @ 12½c. ₱ lb., on 58 lbs. to the gross cwt.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
April 19	10 @14 c.	11¼@11¾c.	11½c.
April 26	9¾@13¾c.	11 @11¾c.	11½c.
May 3	9¾@13¾c.	10¾@11¾c.	11 c.
May 10	9¾@13½c.	10½@11¾c.	11 c.

Milch Cows.—Cows have been dull of sale through all of the past month. Prices have not been maintained, and quotations are reduced to $40 to $70 for common to good cows, with slow sales at these figures....**Calves.**—For this class of stock the market has been easy, with a gradual weakening at the close, and prices gave way fully ½c. ₱ lb. The range at the close was 5@ 9c. ₱ lb. for poor to prime veals....**Sheep and Lambs.**—The market for sheep closes dull, with prices falling. Ordinary to extra clipped sheep, sold for 5 @ 6½c. ₱ lb. No good wooled sheep were offered. Spring lambs were quoted at 10 @ 13c. ₱ lb....**Swine.**—There has been a good demand for hogs, and prices have generally ruled steady. As we close, there are no live hogs on sale, and city dressed are very firm at 9⅞ @ 10c. ₱ lb.

The following statement, taken form a report made by Sidney D. Maxwell, Supt. of the Chamber of Commerce of Cincinnati, and kindly furnished us by that gentleman, gives the quantity of pork, barreled and in bulk, and lard, in stock in that city on the 1st of May, 1875, compared with the stocks on hand the same day last year. We give totals, and omit details:

Winter Packing, Nov. 1st to March 1st.	1875.	1874.
Pork in barrels	26,724	10,075
Bulk meats (shoulders and sides), lbs	37,108,017	33,522,865
Bacon (shoulders and sides), lbs	1,256,197	2,266,985
Hams, sugar-cured and pickled, lbs	11,787,738	9,745,985
Total, bulk meats, bacon, and hams, lbs	40,151,952	45,565,835
Decrease in 1875, lbs	5,413,883	
Lard in tierces	22,294	6,607
Lard in bbls. and kegs	3,404	2,602

Effect of Feed.—"W. S.," Ogle Co., Ill. Food of a proper character and in sufficient quantity, is not alone sufficient to produce abundant milk. Milking properties come chiefly by inheritance, and although milk can not be produced without food, yet there must be a natural capability in the animal, to change this food into milk. There are good and poor cows, and feed will not at once make a good cow out of a poor one. But if a poor cow is fed well and her calves are raised well from their birth, the character of her descendents may be greatly improved in a few generations. The improvement is increased by selecting a bull from a good cow, and also by selecting the best of the calves to breed from. If this course was generally taken by farmers and dairymen, it would require but a few years to largely increase if not double the value of our common native cows.

Last Call.

Last Chance,

BUT A

Grand One,

Ending June 30, 1875,
At 6 O'clock, P. M.

FOR THE

Old and New.

The Publishers have offered a variety of Splendid, A No. 1 articles **free** to those sending in clubs of subscribers for the *American Agriculturist*, of *Three* names or more. Over

15,000 Persons

have secured these Premiums, and in **499** cases of every **500**, with great satisfaction. Many more have clubs partly made up. They should be promptly filled out **now**, as the Premium Offers only extend to the end of June.

10,000 NEW CLUBS

Can be started and easily made up during June.

There are many fine things in our Premium List, and you can get one or more of them **without money,** and with only a few minutes time. See part of them in the next column, and in the Illustrated Descriptions on the sheet you have already, or if you have not a copy, one will be sent free on application.

LARGE PAY

FOR

LITTLE WORK

Is not this Journal, with all its Illustrations, its variety of reading, its large size, and low price, well worth all its cost?

If it is, explain this to a few friends and neighbors, and offer to send on their names as subscribers. It will cost you but a little effort, *while for every three names or more*, the Publishers will present you with a valuable article worth having, as named below. **Extra.** ☞ Besides your Premiums, every subscriber can also have a Fine *Premium Picture*, offered on p. 211.

AS A

Constant Business,

Many persons collect five to twenty-five names a day, receive our Premiums, and sell them. But in all June, **YOU, READER,** can get three, five, ten, twenty, or more names, and receive a nice Premium, as named below.

☞We will present to you, **free,** for sending

Only **3 Subscribers,**

(**$1.60** each, a year, post-paid.)

A **Pocket Tool Holder;** or **Apple Parer;** or **Cherry Stoner;** or **Crandall's Acrobats;** or **Indelible Ink** with **Pen,** etc. etc., (each worth $1 to $1.50).

For only **4 Subscribers,**

Fine **Pocket Knife;** or **Bracket Saw;** or **Patent Revolving Pencil,** etc.

For only **7 Subscribers,**

Excelsior Pocket Microscope; or **Child's Silver-plated Cup,** etc.

For only **8 Subscribers,**

That Splendid **Multum in Parvo Pocket Knife** (a pocket lot of tools weighing only 2 ounces); or first-rate **Gold Pen,** etc.

For only **10 Subscribers,**

Fine **Carver and Fork;** or French Cook's **Knife, Fork and Steel.**

For only **12 Subscribers,**

Doll's **Cottage Chamber Set;** or **Child's Silver-plated Knife, Fork** and **Spoon.**

For only **15 Subscribers,**

One dozen **Silver-plated Teaspoons;** or Ladies' **Elegant Gold Pen** in Rubber case, etc.

For only **18 Subscribers,**

A $10 **Library** for the Farmer's Home. Your choice from our list; and for an increased number of subscribers your library can be proportionately increased. (See Premium List).

In addition to the few articles enumerated above, many others are offered in our Premium List, as Elegant Silver-plated Tea Set; Ice Pitcher; Cake Basket; Knitting Machine; Sewing Machines; Breech Loading Pocket Rifle; Double-barreled Gun; Watches; Piano; Melodeon, etc. etc. Any of these valuable and useful articles, can readily be obtained by any one who will put forth a little well directed effort, during this pleasant month of June. Send and get, free, (if you do not already have it), our Illustrated Premium List.

containing a great variety of Items, inc'uding many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

☞ **N.B.—The New Postage Law.** —On account of the new postal law, **which requires pre-payment of postage by the publishers, after January 1st, 1875,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of postage by the Publishers, at New York, for the year 1875.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Bound Copies of Volume Thirty-three are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last eighteen volumes (16 to 33) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Our National BAZAAR this month, contains the usual assortment of good things, advertised by trustworthy men. It will always pay any one to look all through the advertisements, and see what is offered, by whom, at what price, etc. Many a man has got a valuable new idea from seeing what others say about business matters, which has started his own thought in a profitable direction. When writing to any of our advertisers, for information, catalogues, etc., or sending orders to them, please let them know that you belong to the great *Agriculturist* family, and you may expect and will receive good treatment. Our advertisers know that we carefully exclude any one who does not promptly perform what he promises in his advertisement.

Origin of Indian Corn.—The Maryland Academy of Science, in its Proceedings for March 15, published in the Tribune, mentions "a letter read from Prof. Gray, stating that there was no reason to suppose that Indian Corn is native or indigenous to North America." Now, on the contrary, Prof. Gray supposes that maize did most probably originate in North America, and he can hardly have written any thing to the contrary. What he did write, in answer to an inquiry whether he had ever seen or knew of any indigenous Indian Corn, or had any sufficient evidence of its growing truly wild, (not as an escape from cultivation), doubtless was, that no really wild corn was known. But the case is much the same with wheat in the old world—to which it belongs, no doubt, although it has never been found in an indigenous state. A. G.

"Torsion" Wagon Springs.—In the *American Agriculturist* for December last, a wagon seat or spring was illustrated, which is made upon the "torsion" principle, the General Agents being Messrs. Schenck & Sheridan, of Fulton, N. Y. The business of this concern has so largely increased, that we understand they have opened a branch establishment at Chicago, under the firm of Schenck, Sheridan & Moffatt.

The Buffalo Gnat.—"H. S." We shall have an illustrated account of this insect, which has destroyed so many horses, next month. It was not practicable to procure the engravings for this issue. There are probably several different species popularly known as Buffalo Gnat, all closely related to the European *Simulium molestum.*

Did It Pay?—Thirty-three years ago two farmers settled side by side, with about equal advantages as to soil, markets, etc. One of them subscribed for the *American Agriculturist*, and occasionally bought a book or two about his business, the whole costing him only $6 a year. His boys read and *thought* about their work, became interested in and *respected* it, and were happy in their toil, because they had something to think about. They grew up intelligent, and settled as good prosperous farmers, respected and influential....The other farmer "couldn't afford papers and books"; (he could afford 6 cents a day, or $20 a year, for tobacco, beer, etc.) His boys worked sullenly by day, and "skylarked" at night; they despised and hated their work, which for them was only exercising brute force, with little mind applied. When old enough to escape parental restraint, they quit the farm, one for this, and another for that, and *none* of them ever amounted to anything. Six dollars a year, or even $1.50 a year, would have made a wonderful difference—would have changed their whole course of life. Would it have paid?... Please show this item to some of your neighbors, who have perhaps not thought of this matter, and invite them to try this or some other good journal for the present year. You may do them a positive good by such a hint.

N. Y. and New Haven Steamers.—Multitudes of people have occasion to come from New England to New York City via New Haven. Those coming by the evening express train, arrive after 11 o'clock, dusty and travel-worn, and it is after midnight before they can get to repose in a hotel. By stepping off at the New Haven Depot, and taking the horse-cars to the palatial steamer C. H. Northam, they will find spacious and home-like saloons, a first-rate bed in a fine state-room, and after a good night's rest, land in the city in time to take breakfast, and be all ready for business at its open-

ing, or for pursuing their journey westward or southward. The fare is only $1.25, including sleeping-berth, or $1 extra for a stateroom for one or two persons, while $2 is saved in car-fare, and as much more in hotel and carriage expense in the city. One can also remain in the city until 11 P. M., have a night-ride and sleep on the fine steamer Continental, and leave New Haven by an early morning-train. It is thus practicable for those living 30 to 60 miles beyond New Haven, to leave home after tea, lose no day-time in coming and going, and have the whole day in New York from 7 A. M. to 10 P. M.

The Ames Plow Company.—This old establishment does not, as one might suppose from its name, by any means confine itself to the manufacture of plows. It is largely engaged in the production of haying implements, especially Burt's Horse Hay Rake, and the American Hay Tedder. These implements enable the farmer to work his hay rapidly, but at such a slight cost that the expenses of the hay crop are materially reduced, and he is rendered almost independent of the weather.

Cranberry Culture.—"J. F. Z.," Minn. If you propose to try to grow cranberries, the best investment you can make is $1.25 in "White's Cranberry Culturist," published by the Orange Judd Company—which is full and practical—indeed a book that one who wishes to undertake cranberry culture cannot afford to do without.

Horticultural Prizes.—The Mass. Horticultural Society, which is always doing something for the benefit of the cause, offers Special Prizes for Essays upon various horticultural subjects—that on Roses is to be decided early this month, but later there come three chances—all open to general competition. Twenty-five dollars each is offered for the best Essay upon Grape Culture in gardens and on buildings, with a list of varieties best adapted to such purposes; the essay to be read on Saturday, Oct. 9....For the best Essay upon the Culture of the Cauliflower and other vegetables of the Cabbage family, (*Brassica oleracea*); the essay to be read on Saturday, November 6....For the best Essay upon the Principles of Landscape Gardening as applied to small suburban estates; the essay to be read on Saturday, November 27....The Essays must be submitted at least one month before the day of reading, and the name of the writer sent in a sealed envelope. For next year we would suggest a botanical subject: what is the "cabbage *family*"—and so near Cambridge too.

Central Park.—It has been a subject of general remark among persons of taste, especially those who have seen what is done in public parks abroad, that ornamental planting of flowers, and sub-tropical gardening are almost entirely neglected in our much praised Central Park. This neglect is likely to be still more marked. The latest act of the politicians who now control matters, is to abolish the office of Landscape Gardener altogether, and thus remove Mr. Robert Demcker, the gardener, to whom the public have been indebted for what little gardening has been done during the past few years—and accomplished too in the face of great obstacles. The removal is claimed to be in the interest of economy; it is that kind of economy we often see in political affairs; he is removed, and three others engaged to do his work. We hope Mr. D. may soon find a position where his accomplishments will be better appreciated, than they were by the political gentlemen who now mismanage the park.

When to Cut Hay.—Valuable practical hints on this topic, will be found in Prof. Atwater's article, on page 213. The reader should become familiar with the principles there enunciated. Some careful re-reading of the previous chapters of these articles, may be useful to those who have not thoroughly mastered them as they have appeared.

Condition of Winter Wheat.—The returns from 300 principal winter wheat growing counties in the United States, to the Agricultural Department at Washington indicate that the damage by unfavorable weather the past winter, has reduced the average condition of the crop 37 per cent. Unless favorable weather occurs, not more than five-eighths of a full crop will be harvested. It is estimated that over one million acres have been replanted. The most extensive damage has occurred in Missouri and Illinois, and the least in Kansas.

Potato Bugs.—A daily paper says: "As a sensible safeguard against the introduction within her borders of the Colorado potato-beetle, Germany has furnished illustrated descriptions of the insect to all vessels plying between that country and American ports, and passengers and sailors are earnestly besought to destroy any stray specimen they may detect."—Good, *semper paratus!* And let them not be particular about the likeness or the stripe of the bug, but, whether they are like the illustrated descriptions or not, smash them all flat, and the *flat* ones flatter; and very thankful will all sea-goers be to "Germany."

Immigration to Mexico.—"Geo. M. W.," Plainfield, N. J. We should not advise any person to emigrate to Mexico, whatever inducements may be offered by that government to attract persons thither. Is there not room and variety enough at home from Maine to Florida, and from Oregon to California? Besides, it is unsafe to believe the reports of appropriations made by Mexico for the benefit of immigrants, and more unsafe to depend upon them. We have had a rather extended experience with Mexicans, and would not live there if the whole country were given us, provided we had to take the people too.

Product of one Rose-bush. — Mr. Thos. Broderick, gardener for Jas. D. Smith, Esq., Stamford, Conn., sends an account of the daily yield of a Lamarque rose during the month of April. The bush is five years old, and is planted out in the ground of the greenhouse. The number of roses cut ranged from 20 to 200 daily, making for the whole month a total of 2,012.

Fistula in a Horse.—"J. D. A.," North Stonington, Conn. Fistula is generally the result of a bruise of the shoulder or withers, which forms a running sore with several pipes or sinuses, pointing in different directions, from the walls of which pus is secreted. The remedy is to destroy these pipes and remove them, and produce an open wound which must be healed from the bottom. The treatment is to inject with a syringe, half a teaspoonful of tincture of iodine once a day, for a few days, until the pipes are destroyed and sloughed away. The sore is then kept open by a plug of lint smeared with simple ointment, until it heals from the bottom. A little compound tincture of benzoin, injected occasionally, will assist the healing.

Plant Named.—"Amelia E. F.," Md. The common Bloodroot, *Sanguinaria Canadensis*. Though the flower is of short duration, this is worth transferring to the garden on account of its earliness.

Keeping Soft Soap.—"P. A. V.," Flanderm, D. T. Soft soap can be kept very well in a pine or oaken barrel. A fish or pork barrel will answer, the salt in the wood will not hurt the soap. A kerosene oil barrel will give a strong smell to the soap, which will make it disagreeable for some purposes, but will not injure it for use.

Hardiness of Silver Thorn.—Steele Bros., Ind. The Eleagnus has endured the winter on our grounds, a little north of New York, not only last winter, but during the much more destructive winter of 1872-'73.

To Ring a Bull.—"G. K. M.," Bucks Co., Pa. A bull should be ringed when a year old; earlier, if he shows any turbulence or vice, but never later.

Some Questions as to Sheep.—"K.," Delaware. No one should attempt to keep more sheep than can be well fed and housed. Three pounds of hay, and one pound of bran or meal per day, is a fair average allowance per head. It is not profitable to purchase wethers for feeding; ewes only should be kept, as the lambs are the profit, the wool and increase in weight going to pay expenses. Ewes may be bought in the fall, and if well fed, may be sold fat after rearing a lamb, within a year, and pay 100 per cent profit on their cost. Pure Merino ewes can not be bought for $3 a head. Common grades with some Merino blood, are worth that price. These sheep, however, with a pure Cotswold ram, will produce first-rate market lambs, or good sheep for wool or breeding. Corn fodder and straw are poor feed for sheep. The wool is rich in nitrogen and potash, and food that will furnish these is absolutely necessary. Clover hay, bran, corn, oats, rye, and buckwheat, are appropriate food. Some straw may be given occasionally to pick over, and some roots will be useful with the dry feed, as a corrective. But sheep may be kept successfully without roots, if given other food of a laxative character. Cotton seed or linseed oilcake meal is useful.

Insects on Flowers.—"Flora," Green Co., O. The black beetle which troubles your Asters and other flowers, is, to judge from your description, *Lytta atrata*, or some closely related species. The only remedy we know is hand-picking and killing them.

Profit in Poultry.—"E. W. A.," Rogersville, East Tennessee. Poultry-keeping is not profitable, unless followed with great perseverance, skill, and experience—nor even then, if there is not a good market near by for eggs and fowls. Grass fields are necessary for a range, unless fancy fowls are kept, and eggs or birds are sold at high prices. A considerable portion of the profit of fancy poultry keepers is from premiums at poultry shows, and to succeed as an exhibitor or breeder of fancy poultry, one must have long experience, tact, taste, and skill, and an established reputation. A young man, who knows nothing of poultry-keeping, would be almost sure to lose his money, by going into the business. Where fowls can be kept on a farm at little or no expense, there they are profitable, but rarely elsewhere.

Machine to Sow and Cultivate Turnips.—"R. D.," Winnebago, Ill. Allen's Planet Seed Drill and Hoe Combined, sows turnips or any other small seeds, and by making the necessary changes, cultivates and hoes the rows. It is made by S. L. Allen & Co., 119 South Fourth St., Philadelphia. It is a light machine, and can be used by a woman in the garden, or a boy or man in the field.

SUNDRY HUMBUGS.—Many persons who are victimized by swindlers, or have attempts made upon them, think they have done their whole duty in the matter if they report the case to us. We have no power to suppress humbugs, except that which accompanies our ability to expose them; and there are many cases in which exposure does but little good. As an illustration of this: we not long ago received a note stating that three licensed venders—giving their numbers—were selling from their carts a few blocks below our office. The writer stated that he had examined their measures, and found all had false bottoms; one tin quart measure having two bottoms over an inch apart. This gentlemen writes us a note asking us to expose the swindle under "Sundry Humbugs" and then to completely throw the matter upon our shoulders, *omits to sign his name.* This gentleman's duty in the case was very plain; he should have bought a quart of what the vender was selling, as evidence that the measure had been used, and then called upon the nearest policeman to make the arrest, and should then have gone with him as witness. Our exposure of a street-vender, who is here to-day and there to-morrow, a month after the occurrence, would do no good whatever, while one single arrest would carry consternation to the whole crew. It is the same with many other cases we are called upon to expose. There is a live-stock concern in Pennsylvania about which we have almost weekly complaints, which are apparently getting considerable sums of money without making any returns. We have no proof of this, other than the assurance of a number of persons in different parts of the country, but which is really no *legal* proof. If facts are as stated, about this Pennsylvania concern, why do not those who have lost their money take legal steps to recover? Writing to us will not get the money back, nor can we publish the concern as swindlers unless we have the proofs which will convince twelve men that we were right in doing so. Law-suits are a natural consequence of our course in exposing humbugs, and the expense of time and money in defending suits where we have abundant proof of the accuracy of our statements, give us all the amusement of that kind we care for, and we do not propose in any case to be called into court without being able to fully substantiate our assertions. We have done in the past, as we expect to do in the future, our full share in exposing swindlers, and this with no other object than to protect the public, and we think we have a right to ask that those who have the opportunity, should help in the work. But to return to this matter of

FALSE WEIGHTS AND MEASURES,

the loss to the community from this source is much greater than is supposed. Aside from the cases of intentional fraud, there is much inaccuracy in the scales and weights of presumably honest dealers. We cannot here point out the inaccuracies that may occur with an honest dealer. Spring-balances are always to be looked at with suspicion; at best they are liable to vary, and a dishonest vender can make them tell heavily against the purchaser. The only safeguard against intentional and accidental short weight is to have a pair of accurate scales or a well-tested balance of some kind, and weigh every article that comes home.

CATCHING VAIN PREACHERS.

There is a new dodge reported by a Virginia correspondent. The Rev. So-and-So is a good man who has been quietly discharging his duties in some obscure town in Virginia, without thought of anything beyond his own proper work. He gets a letter from a person in N. Y. He knows no one in that city, and wondering, opens the letter; he finds it dated No. 000 5th Avenue; he has heard of that as the place where the "nabobs" live; great is his astonishment to find that it is a gratuitous letter from Mr. Whats-his-name, praising a beautiful extract from one of his sermons. Oh! this was a lovely sermon, it did Whats-his-name so much good; he only paid $2 for the "Rambuleer" published by Art & Co.,

N. Y., and he holds that volume as the priceless gem of his extensive library. Is not Parson "So-and-So" mortal? is he not too guileless to see the bait? He sends the $2, which can be poorly spared—but it will be such a surprise and pleasure to his wife to see one of his sermons in print—printed in New York, too. He says nothing to the wife, but sends the $2 to Art & Co. He awaits the arrival of the book by mail—and at last accounts was still waiting.

THE MINING FEVER

is now prevailing in eastern Massachusetts, and the reported success of some mines has caused great excitement throughout Essex and adjoining counties. Already very suspicious-looking persons are prowling around farms, and proposing to pay large prices for the property on a provisional purchase, the farmer signing a bond to sell at the end of two years if valuable metals are found on the place. All the advice we can give is to be careful how you sign anything affecting your property. No doubt these bonds, perhaps in an obscure manner, convey the right of exploration, and the unfortunate signer may find excavations made in his best fields, or even in his front yard in the "exploration" for silver and gold. Be cautious....Complaints are now and then made of

BOGUS CANVASSERS,

who come around and get subscriptions for papers which have no existence. It would occur to most persons to ask to see a copy of the paper to which their subscriptions are solicited. The people of Wilkesbarre, Pa., have been victimized by paying money for a paper said to be published in New York, which, and its alleged publishers, is not to be found.

TELEGRAPH INSTITUTES.

We have received so many complaints of these concerns that there must be something rotten in those at some western points. A correspondent at Harper's Ferry, Iowa, complains of being swindled himself by one of these in Wisconsin, and states that many young men, including cripples, who go there, get "beaten out of" their hard-earned money, and asks us to warn people against such Institutes. That there are "Telegraphic Institutes" and "Commercial Colleges" which promise much more than they can perform, seems very probable, but unless our friend can give us something more definite, we cannot warn people against the particular "Institute" of which he complains.

LOTTERIES

for the present seem chiefly confined to Texas. It is to be regretted that this magnificent state, with such wonderful capabilities, and which within a few years has made such cheering progress, should harbor these enterprises. There are several of them in full blast, one of which "The Texas Mutual Benefit Association" has a truly ingenious plan for getting rid of its tickets. It sends a person five tickets with a circular stating that the price is $2, but if the one who receives them does not wish to go $2 on the chances, he is advised to sell four of the tickets at 50 cents each, and keep the other for his trouble, and this one ticket *may* draw the capital prize of $25,000—and then again it may not, no knowing what may happen. The Texans talk about Yankee 'cuteness, but this beats anything we have known a Yankee to do. The name of the "secretary" is Choate Somerby, which printed in fac-simile, looks at first sight most unfortunately like "Cheat Somebody," as one of our correspondents suggests. The business of selling

COUNTERFEIT MONEY,

or rather of pretending to do so, (for as we have before explained there is no counterfeit money in the transaction, all the machinery being for getting a hold on some unfortunate victim), seems to have revived a little as spring opens. It would be amusing to us, who have circulars of these chaps by the bushel, to see the surprise of those to whom such a matter is entirely new, did we not see that their indignation at being made the recipient of a proposition to engage in dealing in "queer" was perfectly honest. One gentleman in South Carolina is careful to send the envelope the circular came in, so that we may "ferret out the scoundrel if possible." "Ferret out"—why bless your honest soul, we have on the table several other copies of the self-same circular, printed on the very same paper, with the same type, each of which has a different name attached to it, and were we to go among our "archives" we could no doubt produce the identical thing with from 25 to 50 different names. ..We thank Henry Woodward for offering a little variety in this line. Most of these fellows offer a printed circular, and poorly printed too, or else a lithographed one, but Henry's circular is written, and neatly too to be in keeping with its style. Henry is not one of these vulgar fellows that talk about "counterfeit money," oh no, he has only "goods," and they are of the "finest quality" which is a great improvement over the old style of circular....These so-called

PURCHASING AGENCIES

are a nuisance. We say "so-called," because there are in New York, and perhaps other cities, respectable persons doing a legitimate business as purchasing agents, but we refer to those chaps in obscure towns whose catalogues and circulars give no names. They offer traps and trinkets of various kinds, but often their real end and object is to introduce improper and foolish books.... John M. Haven, of Mich., though only 16, is too old a bird to be caught with such chaff as that sent out by the "Union Purchasing Agency." Master H. has no need of a book that teaches "How to make a girl fall in love with you," or "how to bet and always win."....In the medical line there is unusual dullness; the old things seem to be very quiet and new ones are rare.

THE DODGES FOR SECURING AGENTS

for the sale of quack medicines all over the country, are ingenious and amusing. These fellows know that they can by mail reach all the postmasters in the country, without knowing their names. We have before us a circular to postmasters, persuading them to find an agent. The medicine man wants a "local preacher," a man "too feeble to labor" or an "invalid" to act as his agent, and to pay the postmaster for securing such, he will send him "one dollar's worth of the medicines, or I will send you one gross of pens"—take the pens, by all means. Others are more liberal; one chap offers the person who procures an agent 20 per cent on all the money that agent may send in during his first year, and to the agent who will buy half a gross of the stuff, he sends a coat pattern.—Moral. The stuff itself must cost precious little to start with—to allow all these discounts. The expense is, in any case, a matter of bottles and labels, as the filling, as we have shown in the former articles, can be made very cheaply....The "Toll-gate" advertisement still appears in papers which go into respectable families. Those who send for it get a card about the size of an ordinary envelope, with a very poor puzzle picture on one side, and on the other the advertisement of a "Doctor" who will for 10c. send his book on private diseases. Well, this book—which is embellished by a portrait of the author is just a wonder. We thought we had seen the high pressure style of "medical" literature before, but this "takes the rag off" of any quackery that we have seen. Being about matters that we do not care to print here, we cannot show it up as it deserves. This book tells us—about a very simple matter—"no doctor under heaven understands this but myself," and on through the whole little closely printed pamphlet, which is designed to convince any nervous person who reads it that something fearful is the matter with him, and that his only hope is to send to this Buffalo quack who treats patients by the month. Abbey—how can you—after publishing this book, run down your brother quacks of the "Bible House," "Howard Association," "Retired Physicians," and all the rest, as you do on p. 23? There is said to be honor among thieves—are quack doctors without that attribute?....A correspondent in Morgan Co., Ohio, offers us some interesting facts about that "National Surgical Institute." We do not need to go beyond its circular to form an opinion of it.

48 CANCER PLASTERS,

and all on one poor woman! A friend in Morrison, Ill., states that a wonderful cancer quack has been there from Princeton, Ill., who has as sharp a nose for cancers as a pig has for truffles. This fellow took *six* cancers out of one unfortunate woman, and finding so many more, he concluded he must take her home with him in order to finish up the job. He writes to the poor creature's husband that he has "got 48 plasters on her," but that's just nothing, as he has taken out over 80 cancers from one woman, and she lived. We are tempted to say that it is a pity that the "Doctor" did. Is there no power to stay those fiends who prowl about, and by giving some "test medicine" profess to find cancers in any one who is weak enough to believe the wretch? An Italian friend of ours—by the way one of the most tender-hearted of men in his acts, but one of the most violent in speech, considers hanging too good for some crimes, and when he hears of anything particularly atrocious says: "Boil them, boil 'em in oil, over a slow fire." Perhaps this would be unnatural punishment, but this cancer quack should have at least 48 plasters put upon his body, "where they would do the most good."

Patent Fences.—"G. H. S.," Mason Co., Ill. There is no necessity to pay a patent right for the construction of a wire fence with pickets interwoven. There are a sufficient number of fences now in use, and not patented, from which to choose. Unfortunately, however, one does not know to-day if the fence he is building may not be patented to-morrow. Patents are granted for anything and everything of the most trifling character, and the patentees frequently impose upon public journals and get their patents described and published as contrivances in common use. Farmers are thus victimized by thousands, and a regular business is thus carried on. The remedy is for the farmers to help the agricultural press to procure a change in the present loose system of granting patents.

Adorn Your Homes

AT A

Trifling Cost.

We have some Splendid Pictures Printed in 18 Color Shades, That are Beautiful, and Charming.

I—"Up for Repairs."

The sister mending her brother's torn clothes, will be a fine ornament in any house.

II—"Look Out."

A maiden at a cascade in the act of dashing water upon you,—a new and greatly improved edition of this new painting.

III—"Mischief Brewing."

A country boy with a "Jack o' lantern," which he has made out of a pumpkin, and he is telling his little sister of the sport they will have with it by and by, after nightfall.

IV—"The Strawberry Girl,"

One of the most popular pictures brought out in this country or Europe, (size 14 by 20 inches,) of which every home should have a copy.

As long as our supply holds out, we offer a choice of any one of the above four pictures, to every person subscribing for the *American Agriculturist*, who sends, to pay the cost of *mounting, packing*, and *forwarding free* by mail, viz:

For No. I....only 25 cents extra.
For No. II....only 25 cents extra.
For No. III....only 25 cents extra.
For No. IV....only 50 cents extra.
} For mounting, packing, and free delivery.

That is, nothing for the pictures, and only 25 or 50 cents extra for cost of mounting, packing, and paying postage or express. Any one of these pictures is richly worth the *cost* of many subscriptions. They are beautifully printed in Oil Colors, and have the appearance, and indeed the value, of Oil Paintings on canvas.

☞ Name your choice when sending in your subscription.

☞ These Pictures are offered to all subscribers now coming in.

Live Stock at the Centennial.—The Bureau of Agriculture of the International Centennial Exhibition will exhibit Live Stock within the months of Sept. and Oct., 1876, as follows: Horses, mules and asses, (as one class), from Sept. 1st to 15th. Horned Cattle, (of all varieties), from Sept. 20th to Oct. 5th. Sheep, swine and goats, (as one class), from Oct. 10th to 25th. The Bureau is in daily receipt of applications for space, and it is highly important that all who design exhibiting, should now make application, as the preparation necessary must be regulated by the actual demands. Inquiries as to regulations for admission of stock, etc., may be addressed to the Chief of the Bureau of Agriculture, Philadelphia.

Basket Items continued on page 237.

A House Costing $2,000.

BY S. B REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

The plans published in the March *American Agriculturist* have called out considerable correspondence, indicating a general interest in houses of that character and cost. The plans here given are somewhat larger, but can be built for very nearly

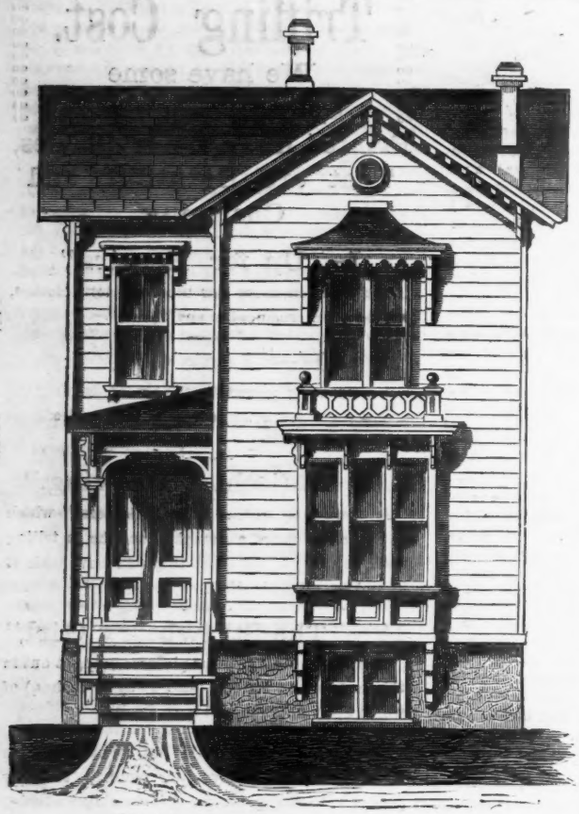


Fig. 1.—SUBURBAN RESIDENCE—ELEVATION.

the same cost....**Elevation,** (figure 1.)—The Front is irregular, having an angle, which narrows the parts, supplies more vertical lines, and adds to their length comparatively. These are important features, imparting a graceful appearance, and influencing the entire character of the house....The angle affords ample room for the Piazza, which can be built for much less cost than when its three sides are exposed.—The next attractive features of the front, are the Bay Windows below, and double windows above, with the Ballustrade, and Hood, so proportioned and arranged, that they conform with each other with pleasing effect.....**Cellar,** (fig. 2.)—The Foundation Walls are of hard bricks laid in mortar, 8 inches thick, and 7 feet high. In localities where the foundation rests on loose sand, care should be taken to provide a bedding, laid 4 inches below the cellar bottom, 16 inches wide, of brick, or better of large flat stones. Still greater care should be bestowed on the bedding for the chimneys and girder supports, for they sustain the greatest proportionate weight, and any settlement of these parts will cause a depression of the floors, disarranging the whole house, and become an immediate and continuous source of anxiety and expense. The Area in the rear is built of hard brick and mortar, with blue-stone steps and coping. Blue-stone Sills are provided for each of the cellar windows....**First Story,** (fig. 3.)—The interior arrangement of the plan will be appreciated as making the best possible use of the room. The Front Hall is wider than is usual in houses of this character. The Stairs are arranged with the "quarter circle" about midway of their hight, which brings the niche down where it becomes an important feature of the hall.—The three principal rooms, the Parlor, Dining Room, and Kitchen, can be entered from the hall. The latter two rooms have doors leading to the lobby. The Lobby is built of 4½-inch tongued and grooved ceiling-boards, with sashes made to swing. A Shelf, 1½ feet high, and another just above the sash, give sufficient framework to fasten the center of the boarding; the ends are nailed to the sill and plate; these shelves will be found useful for many purposes. Attached to the lobby, and built with it, is a good sized Pantry, (*p*,) for the dining room. The kitchen is provided with a Closet at the side of the chimney, a Sink, with small closet underneath, and a direct communication to the cellar stairs under the hall stairs. The window in the side of the dining room may be omitted, if the house is in a village and joins another, but this is desirable to give abundant light in this, which is really the living room of the family.—The method of heating indicated in the plans given for March are applicable to this plan....**Second Story,** (fig. 4.)—The peculiar manner of constructing the Stairs, brings their landing nearly in the center, so that hall space sufficient only for four doors is necessary, leaving almost the entire floor to be laid off into rooms. The heavy lines show the most simple method of dividing this story into four rooms. Should another room be desirable, it can be taken off from two rooms as shown by the dotted lines. In this case another window may be inserted as indicated. Every one's experience is that there cannot be too many closets, and we nave added one to every room in the house, except the parlor....**Construction.**—The bill of timber appended indicates a "regular" *Frame*. It is a great satisfaction, and saving, to have the timber properly "laid out," and framed by, and under the immediate direction of a master mechanic, so as to be quickly and substantially raised. Four good carpenters would easily frame all the timber in this house in 2 days, and raise it the next day. At least one man of well known ability and experience as a mechanic should be with and take charge of those employed to build a house. It is not economical for one about to build a *home* to trust such work to the caprice of an inexperienced man, who has "helped" around some job, until he has learned the name of tools, but who has no positive knowledge of the trade, and could not for his life "lay out" the corner post for a two story house, yet is shrewd enough to screen his deficiencies by suggesting "balloon," or something indefinite, that requires little or no skill. It sometimes happens, in localities remote from cities or large towns, that persons are obliged to do with make-shifts, to get a home at all. It was such a condition of things that led the well disposed pioneer of the west to adopt the method called "Balloon framing," which is really no framing at all, and required no skill to get up a kind of home, acceptable under such circumstances. But wherever skilled labor may be had, it is ridiculous to see a gang of intelligent (?) mechanics standing up pieces of diverse lengths, and propping them in a vertical position with rods running every way as braces, not one of which can be removed until the upper ends are secured by ties of some sort. A good frame in a house is equivalent to a good constitution in a man, and is of vital importance; it need not be clumsy, or overloaded, but should at least have the merit of being able to stand alone....**Painting.**—The principal object in Painting should be to protect and preserve the materials used in construction, as also to give a good appearance. All exterior wood-work, though executed with the greatest care and in the most substantial manner, if left exposed to climatic influences is very soon destroyed. It is economy to

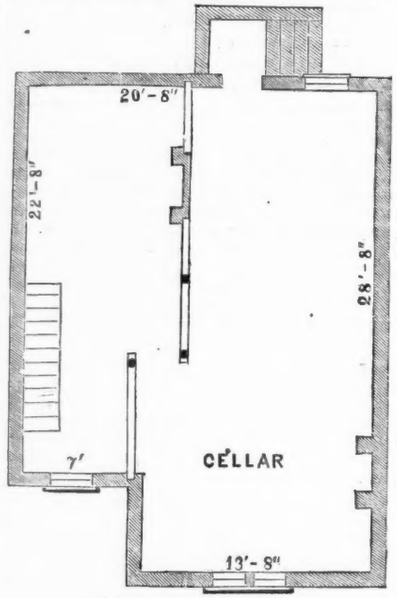


Fig. 2.—PLAN OF CELLAR.

use only the *best lead* and *linseed oil* in painting exterior wood-work. They will outlast all other compounds, present a better appearance, and in the end furnish a much better foundation for future painting. The difference in cost between the best materials and the imitations, for painting the exterior of a house built on these plans, would not exceed twelve dollars, and the cost of labor would be just the same in either case. The first coat, or "priming" should be put on with the greatest care, so as to thoroughly cover and close all the pores in the exposed surface. All window and outside door frames, corner boards, window caps, water table, and stoop flooring, should be primed *before* setting, especially their edges, where joinings

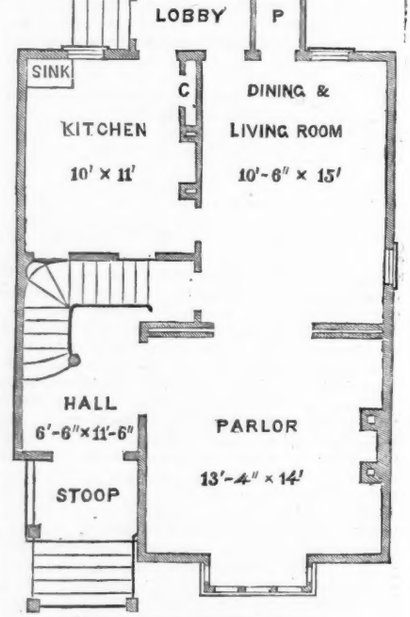


Fig. 3.—PLAN OF FIRST FLOOR.

require to be made, as it will be the last opportunity to do justice to these parts, where moisture is liable to collect and remain. When priming is well done, it is best to let the building stand until

thoroughly dried, both inside and out, before adding the second coat. It must be evident to any one that much of the water used in the plastering must percolate through and thoroughly saturate every part of a house. Sufficient time should be allowed for this moisture to pass off, and the whole house to become dried out....The nails should then be "set," which will tighten up permanently all the laps in the siding, after which the work should be properly puttied and the second coat applied. Autumn is the best season to paint, after the extreme heat has passed, and insects have disappeared; the process of drying will be slower, and more perfect, with less waste by evaporation, leaving a smooth solid surface. I am often asked *"what color to paint?"* Notwithstanding much has been said against white for outside painting, and the assurance that there are many cases where white would not be suitable, or thought of, yet I believe that for suitability and good taste in nine cases out of ten very light colors, or pure white are indicated. I have known instances where much time has been spent to discover a suitable color for a house, where nearly all the different pigments were drawn from, and after much mixing and testing, the result has generally been an unknown and unnamed shade, as if everything depended on some sentimental "blending with the back ground," or in other words, painting the house out of sight. As a rule

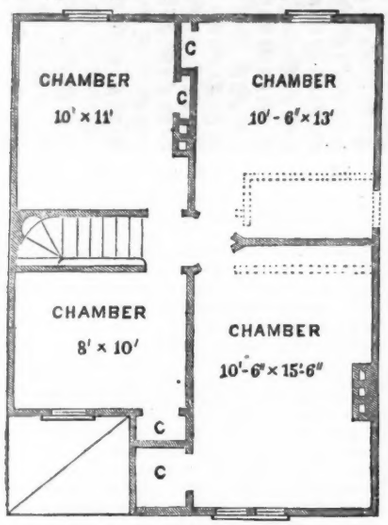


Fig. 4.—PLAN OF SECOND FLOOR.

paint so as to best reveal the true character of the building, and this is best done when the colors afford the foundation for the natural shadows that result from the true and actual projections.

Cost: The following items, prepared with care, embrace the full bill of materials, and labor required in the construction of this house, together with their present cost in the vicinity of New York:

57 yards Excavation, @ 20c. per yard		$11.40
13,000 Brick, furnished and laid, @ $15 ₱ 1000		195.00
500 yards Lath and Plastering, @ 35c. per yard		175.00
28 feet Stone Steps and Coping, @ 40c. per foot		11.20
16 feet Stone Sills, @ 30c. per foot		4.80
2370 feet Timber, @ 2½c. per foot		53.32
viz. 2 Sills, 4x7 in. x30 ft. long.	6 Posts, 4x7 in. x30 ft. long.	
2 Sills, 4x7 in. x 22 ft. long.	2 Ties, 4x6 in. x 30 ft. long.	
1 Girt, 4x9 in. x 16 ft. long.	2 Ties, 4x6 in. x 22 ft. long.	
1 Girt, 4x4 in. x 8 ft. long.	2 Plates, 4x6 in. x30 ft. long.	
26 Beams, 3x7 in. x22 ft. long.	2 Plates, 4x6 in. x 22 ft. l'g.	
6 Beams, 3x7 in. x15 ft. long.	6 Pieces, 3x7 in. x 16 ft. l'g.	
400 Wall Strips, 2x4 inches x13 feet long, @ 16c, each		64.00
200 Novelty Siding Boards, 9½ inches, @ 38c. each		76.00
160 pounds Tarred Paper, @ 5c. per lb		8.00
128 Tongued and grooved Flooring, 9½ inches, @35c ea		44.80
110 Hemlock Boards, @ 20c. each		2.00
9½ Squares of Tin Roofing, @ 9c. per foot		85.50
120 feet Cornice, 30c. per foot		36.00
111 feet Gutter and Leader, 10c. per foot		11.10
1 Bay Window with Blinds (complete)		75.00
Materials in Stoop, Lobby, Balcony, Hood, and Corner boards		78.00
8 Windows with Blinds, (complete) @ $16 each		128.00
4 Cellar Windows, (complete), @ $4 each		16.00
24 Doors, (complete), @ $10 each		240.00
2 Stairs, (complete)		80.00
2 Marble Mantels and 4 Pine Mantles		75.00
Base-Boards and Shelving		25.00
Nails, Sink, and Pump		34.00
Cartage, average one mile		40.00
Carpenter's Labor (not included above)		250.00
Painting, two coats		100.00
Extra for Girder Supports, Grading, etc		60.88
Total cost of materials and construction		$2,000.00

Probably the average cost, throughout the country, may be a little less, as brick and wood are cheaper in most localities. Where necessary to economize more, some saving may be effected in blinds, stone steps, etc., but the small additional cost of these will be amply repaid where it can be possibly afforded.

The Element of Pluck.

People in pecuniary misfortune, in estimating their liabilities and resources, seldom consider among the latter the element of *pluck*. The tendency with nearly all unfortunates is to magnify difficulties, and underrate or wholly forget their power to overcome them. A man in good health, with unsullied character, need fear no evil, nor be robbed of his happiness, no matter how adversely things may appear. If he is heavily in debt, and can satisfy the community that he is straining every nerve and appropriating all his resources to discharge his obligations, there is no danger of his losing a well-earned reputation, and there is no reason why he should not be cheerful in his family and joyous in his own heart. The self-consciousness of integrity, coupled with the approving smile of the Father above, should enable a man to face every foe and surmount every difficulty. If instead of burdensome debt, he is overtaken by fire or flood, so that the accumulated comforts of years are swept away in an hour, he gains nothing by sitting down, folding his arms, and weeping over his misfortune. "Up and at it," is a familiar, but expressive phrase. Pluck is a lever that upheaves difficulties. Before a resolute man, the green withes of adversity snap like threads of tow. It is not enough that a man in trouble has physical force to execute, and mental clearness to plan, but behind both he needs the impelling power of pluck. The steam engine may be ever so perfect and bright, the engineer ever so competent, but both would be unavailable to draw the long line of cars if *steam* were lacking. Pluck is to a man what steam is to the railway train.

A farmer, a short time ago, came to a well-known citizen for advice. He was in low spirits, matters had gone wrong with him through loans to friends, and speculations outside of his farming business, until his debts became exceedingly burdensome. Unaccustomed to such interruptions in his hitherto unwavering success, his spirits gave way. Brooding over his troubles, he became morose and gloomy. He had no cheerful words for family or friends. He allowed trifling causes to keep him from church, and instead of listening to the encouragement of the gospel, he moped on Sundays around his house and barns. Wherever he went he carried a "hang-dog look," and whatever he did, was done feebly, as though strength and ambition were both gone. In this condition of things a friend advised him to open his mind to the citizen above mentioned, whose long familiarity with trials made him capable both of sympathy and counsel. The conversation soon developed the fact that the farmer owned a property worth thirty thousand dollars, that his entire indebtedness did not exceed thirteen thousand dollars, and that his income exceeded his outgoes, including interest on his indebtedness, by one thousand dollars. "Why," said the citizen, "have you been disheartened over such a condition of affairs as this? What! a surplus of $17,000, and a net income of $1,000 per year to apply to your debts, which will grow less and less burdensome as successive payments are made. Why, my friend, thousands of poor fellows struggling with debts without any surplus income, would be happy to step into your shoes and sing like a lark over their good fortune. There is but one thing that is the matter with you, my friend, you have simply lost *pluck!* Yes! one other—professing faith in a Divine Providence, you have also lost *trust.*"—So after many encouraging words on the part of the citizen, he bid him good-bye with a strong grasp of the hand, and with the parting words, "thank you, sir, I feel better." And so he did; his eyes were opened to realize that, as in the case of thousands of others, his troubles were imaginary. How different the spirit of a furniture dealer of my acquaintance, whose entire property above ground was recently destroyed by fire in a single night. Three buildings, a stock of furniture, household comforts, wardrobes, keepsakes, indeed everything, so that morning found the family dispersed in friendly dwellings with nothing saved but the garments in which they fled.

But see this man's pluck. In answering a friend's sympathizing letter, he writes: "Your kind letter of sympathy at our late mishap was duly received. I have so much to tell I hardly know where to begin. Well, thank Providence we are all well, in excellent health and full of pluck. We have almost forgotten about it, and are tired of talking fire, and are on the go-ahead track only. In less than 24 hours we had a store rented, and commenced to get ready for a new start. Some folks could not understand how I could take it so coolly, and if our loss had not been so complete and total, I might have been suspected from my coolness of having a hand in it. I have been rusting for two years, my son ran the business, while I did the playing. But now the rust is pretty well rubbed off, and I am about as bright as ten years ago." To any one in pecuniary distress, let me suggest that the way out of difficulties is not by hang-dog-ged-ness, but pluck. C. C. N.

Science Applied to Farming.—VI.

BY PROF. W. O. ATWATER, WESLEYAN UNIVERSITY, *Middletown, Conn.*

How Science is Saving Money and Increasing the Profits of Farming—The Proper Time for Harvesting Hay and Clover.

"Haying time" is close at hand, and will bring with it an opportunity to put in practice some principles brought out in previous chapters. And while we need Experiment Stations of our own to add to our knowledge of these principles, yet the recent investigations at the European Stations have yielded results worthy of careful attention.

The proper time to cut hay and clover, depends *1st*, upon the *Feeding Value* of the crop gathered; —*2nd*, upon the value of the after-growth;—*3d*, upon the value of the roots and stubble left to enrich the soil for another crop.

The *Feeding Value* depends: *First*, upon the quantity gathered, and *Second*, upon the greater or less proportion of nutritive material it contains.—To obtain some definite knowledge concerning these points, Dr. Wagner, director of the Experiment Station at Darmstadt, selected a portion of a field of red clover, where the growth was uniform, and measured three plots, each containing about 2,300 square feet, (8¼ square rods), numbering them I, II, III. On May 22nd, just before the clover began to blossom, plot I was mowed, yielding 85 lbs. of cured hay. June 13th, when in full blossom, plot II was mowed, with a yield of 114 lbs. of dry hay. July 1st, near the end of blossoming, plot III was cut, and 128 lbs. of dry hay obtained. The gain in 40 days, May 22 to July 1, on 8¼ square rods, was 43 lbs., or about 800 lbs. per acre.

But did the increase of feeding value correspond to the gain in weight? To answer this, Dr. Wagner carefully analyzed the several cuttings, and found that, as is always the case, the young succulent clover was rich in albuminoids, and contained but little crude fiber. But as it grew older, the percentage of albuminoids (nitrogen) decreased, while the crude fiber as constantly increased.

Table 7.	Yield of Cured Hay.	Organic Substance in the Hay.	The Organic Substance of the Hay contained		
I.—CUT MAY 22. II.—CUT JUNE 13. III.—CUT JULY 1.			Albuminoids.	Crude Fiber.	Other Organic Matter.
	lbs.	lbs.	lbs.	lbs.	lbs.
I.—Just before blossom	85	64.2	11.5	21.9	30.6
II.—In full blossom	114	90.5	12.2	36.4	41.9
III.—Toward end of blossom	128	100.2	12.8	42.8	46.9

Let us study this table carefully. We have previously learned that the albuminoids (3d column) are the most valuable, and the crude fiber the least

valuable part of the food. In 40 days the amount of organic substance increased from 64 to 100 lbs.—just 36 lbs. But in this there was a gain of only 1 lb. of albuminoids, while the crude fiber increased about 21 lbs., or nearly doubled. And during the last 19 days (June 13 to July 1) there was hardly any gain of albuminoids, although the crude fiber increased 6¼ lbs., and other carbo-hydrates 5 lbs. These figures show most clearly that the older growth was far less valuable as compared with the younger, than the increased weight of 43 lbs. would imply. Dr. Wagner calculated the money value of these crops, as based upon the nutritive values of the albuminoids and carbo-hydrates which each contained. Here are his figures:

Table 8.—Clover Hay.		Value.
I.—Cut just before blossoming....	85 lbs.	72 cents.
II.—Cut in full blossom.....	114 lbs.	$1.05 cents.
III.—Cut near end of blossom.....	138 lbs.	94 cents.

However theoretical these calculations may seem, they are doubtless not far out of the way as an expression of the relative values of the crop at the different cuttings. We may illustrate this very clearly by another consideration which we have previously discussed, namely, the *digestibility* of the different crops. How much of the material of these different crops would animals which consume them *actually digest*, and make over in flesh, fat, milk, etc., or utilize in other ways in their bodies? Some experiments by Dr. Wolff, of the Station at Hohenheim, will aid us in answering this question.

Four different portions of a clover field were mowed at as many different times, and the hay fed to sheep. Four experiments, with hay of different degrees of maturity, were thus made. During each the hay consumed by the animals, and the excrement voided, were carefully weighed and analyzed. Thus the proportions of each crop which the animals digested, were learned. Below are the results:

Table 9. Time of Cutting the Clover.	*Out of every 100 lbs. of the following substances contained in the clover cut at the different periods, the animals digested the number of pounds set under each, viz.:*				
	Organic Substance.	*Albuminoids.*	*Crude Fiber.*	*Fat or Oils.*	*Other Carbo-hydrates.*
	lbs.	lbs.	lbs.	lbs.	lbs.
Just before blossom.....	74.	74.	60.	65.2	82.7
In beginning of blossom....	68.	76.1	53.	67.	74.5
In full blossom.....	63.9	64.8	49.7	61.2	71.8
Near end of blossom.....	58.3	58.6	38.8	44.5	70.7

It appears, then, that from every 100 lbs. of organic substance in the young clover, the animals digested 75 lbs., or nearly three-fourths. As the clover grew older, it became less and less digestible, until in the most mature crop only 58½ lbs., or little over one half, was digested. Taking the several ingredients of the organic substance separately, we find a similar decrease in digestibility as the plant matures. From every 100 lbs. of albuminoids the animals digested in the youngest clover 74, and in the oldest only 58½ lbs. The amount of crude fiber digested falls in like manner from 60 to 39 per cent.—Remember that all which was not digested was passed off as excrement. It was worthless for nutrition, and was useful only as manure. The youngest clover was nearly as digestible as meal or potatoes, while the oldest was but little more digestible than straw.

Now apply these results to those obtained by Dr. Wagner, in Table 7, above. The 85 lbs. of hay of Plot I, cut just before the beginning of blossom, contained 64⅕ lbs. of organic substance. According to Table 9, 74 per cent of this, or 47½ lbs., would be digestible. Comparing the other items in Tables 7 and 9, we have the following results of Dr. Wagner's crops of clover:

Table 10. ⅝ Rods Clover Cut.	*Obtained Organic Substance.*	*Per cent Digestible.*	*Pounds Digestible.*	*Value as calculated by Wagner.*
	lbs.			
I.—Just before blossom.....	64.2	74	47.5	72c.
II.—In full blossom.....	90.5	69	61.6	105c.
III.—Near end of blossom.....	102.2	58	59.3	94c.

To every one having grass or clover to harvest, such facts as these are very important. From May 22d (I) to June 13th (II), there was an increase of 39 lbs. of hay, including 26 lbs. of organic substance. The digestibility, however, decreased from 74 to 68 per cent during this time, so that the actual gain of nutritive material was (61¼—47½) 14 lbs. But from June 13th (II) to July 1st (III), while there was a gain of 14 lbs. of hay and 11¼ lbs. of organic substance, the digestibility decreased 10 per cent, so that there was not a gain, but an actual loss of (61¼—59½) 2¼ lbs. of nutritive material. This makes a bad showing for the older crops, but the case is, in fact, still worse. Table 7 tells us that the earlier crops contain the largest proportions of the albuminoids, and Table 9 that a larger percentage of these is digestible in the younger clover. It is clear then that the digestible material is richer in nitrogen, and hence worth more pound for pound in the younger than the older crops.

We are then forced to the conclusion that, as far as the FEEDING VALUE *of the crop is concerned, the most profitable time for harvesting clover is a little before the period of full blossom.*

The experiments upon other grasses have not been as extensive, but so far as they have been made, as well as from analogy, we may adopt the same conclusions. And these results obtained by positive science, correspond with the experience of the most observing, intelligent, practical men.

Another question of considerable importance must be considered. If the grass cut 20 days before the close of blossoming is then at its highest feeding value, by cutting it thus early, *we have* 20 *days more for the aftergrowth*, and this too at the period before the dryest, parching weather arrives. It is evident that there will be a much larger growth of aftermath than if the first cutting was delayed. We have not space to go into details, or to give experiments on this point. They are hardly needed.

One objection, if not the only one, to early cutting of clover especially, may be named, viz.: clover roots gather much organic matter which enriches the soil for other crops, even when the clover itself is mowed for fodder. Experiment and observation seem to show that these roots continue to develop and enlarge up to the full maturity of blossoming and seed—gathering an increasing amount of fertilizing material. When, therefore, the clover stubble is to be plowed under for other crops, the loss from later mowing is *partly* made up in the increase of roots and stubble. How much account is to be made of this, we have, as yet, not sufficient experiments and investigations to decide.

Bee Notes.

BY M. QUINBY, ST. JOHNSVILLE, N. Y.

Among the domestic animals, we have various grades of improvement. Among horses and cattle, the various breeders find points in each grade that they wish to propagate for some particular purpose. They select parents that have points that they expect to find in their offspring. The beautiful Durham is not expected from the wild race of the tropics. Among bees, the beautiful and amiable Italian is not expected from the black, vicious, and often more indolent native. Both varieties may have some traits that it is desirable to propagate, while both have some which might be advantageously left out.

Fig. 1.—THE BROOD CUT OUT.

One stock may possess vigor and industrious habits, and a disposition to resent any measure that seems to them an approach to robbing them of their stores. Another may be too indolent to collect much, and lack energy to protect what they have. Accumulation of stores is what is usually wanted. If industrious habits and a mild disposition are found combined, that is the breed to propagate from. With most of us these traits are only ascertained by close and attentive observation. Thirty years ago an old lady, when asked to fix a price for one of her colonies, replied that she had smarter bees than any one else, they swarmed early and often; she had probably discovered a fact, without being able to trace it to any cause. What is there to prevent changing all our stocks into the best in one summer, if all the queens are selected from such only? It is time this point received attention. In rearing cattle, it will not do to check the growth by an insufficiency, or an inferior quality of food. Queen bees need a full development as well as cattle. Much discussion has been had relative to rearing queens in full stocks, or in small nuclei; some claiming that a full stock is the most natural. It will not be discussed here, further than to say that a full supply of nutriment is required to rear good queens; usually the least trouble and expense, where many queens are to be reared, is to make a little box to represent a movable comb hive. Combs of full size of hive can be used on the same principle, the size makes but little difference, if there are nurse bees enough. It would seem that the Creator had designed especially to facilitate the increase of the best stock. In addition to the number of queens provided,

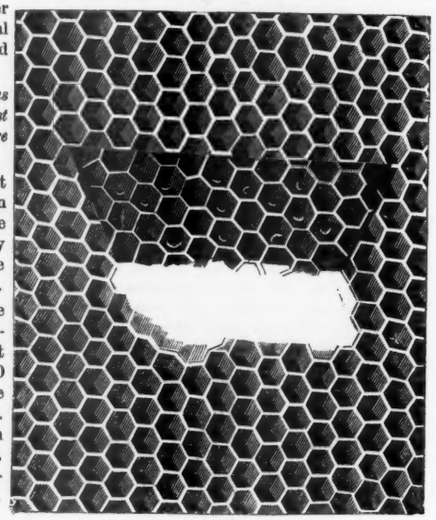


Fig. 2.—THE BROOD FIXED IN THE COMB.

when a swarm issues naturally, it is so arranged that they can be increased almost indefinitely. Eggs of a fertile queen are of two kinds—one produces males, the other females. Means of deciding which will produce drones, and which workers, are given to all observers, as one kind is deposited in worker cells, the other in drone cells. Whether the *act* of depositing the egg in the large or small cell decides the sex or not, will not now be discussed. One thing is certain, the eggs deposited in worker cells that ordinarily would produce workers, can be converted into queens. When young bees not many days old, are destitute of a queen, and are provided with eggs, or young brood, in season, they at once proceed to provide one or more. It is well to wait, before commencing to raise queens, until there is a prospect of drones hatching, as soon, at least, as the queens do. If bees to commence with can be procured a half mile away, it is better. Get a quart or thereabouts. Now, from the stock you wish to breed from, take a piece of comb containing brood. It is better to get it all of one age. The first or second day after the eggs are hatched, is best. Take out the comb containing brood, and hold it so that the light shines directly into the bottom of the cells. Find a spot where the eggs are just hatched. Take such; as queens will mature from them a little sooner than from eggs just laid. The larvæ that have been fed too long as workers, can not be so well developed into queens by nursing. New comb is better than old. If old and tough, cut off half the length of the cells with a knife. Cut out a piece the shape of fig. 1, 3 or 4 inches long, by ⅗ an inch wide. Then cut from a larger piece—let it be clean—a place that this will just fit. Give an inch space under it, in the shape shown in fig 2. Let the piece of brood be crowded in firm enough to hold a few hours, until the bees weld it fast. Combs should contain abundant honey for several days. If bees to raise the queens are to be taken from the home yard, they should be mostly young, if possible. Go to a strong stock in the middle of the day, when most of the old ones are out to work, raise out a comb or two, and shake or brush the bees into a box, made with joints close enough to keep them when the lid is on. Young bees will not be apt to fly. Have a little piece of wire cloth one side somewhere, in hot weather, for ventilation. Make a hole in the bottom of the box, in which the combs with the brood ready for the bees, are to be put, and one to match in the top of the one with bees. Open both and set the two together, and the bees will creep into the upper one with combs and brood. Keep confined for thirty-six hours or more, when they may be allowed to fly out from the stand they are to occupy. More than one piece of brood can be put in the same comb, if many are wanted, and there are bees enough to take the proper care of it all. If brood that is taken for queens, is not over two days old from the egg, a queen

can not be matured from it in less than ten days. When the first one matures and comes out of the cell, she makes it her business to look up other queen cells the first thing, and destroy every competitor. If the beekeeper wishes more than one queen, the extra cells may be cut out before any hatch—leaving one. Put those taken out in their natural position in a box, prepared as for brood, using cell instead of brood. Manage as before, and a gain of several days is obtained. As many as there are cells can be prepared. Care is needed not to bruise the cells, or turn them over roughly. The queens inside may be very tender, and rough handling may kill them. When combs of full size of hive are used, instead of small ones, a little more care is needed to keep warm, etc. There will be this advantage in large combs. The queen can be established in a full colony, and there is no trouble in transferring her. When she is once established, and begins to lay, go to a hive that is well filled with bees, and has several combs well filled with sealed brood that needs no further nursing, take one or two, shake off the bees, and put them in with the young queen. No fighting will occur with the young bees as they hatch. More combs may be added until it is thought to be strong enough, with what they will rear of their own. When an increase of colonies is desired, instead of surplus honey, they can be increased faster in in this way, than in any other. New colonies can be made to assist others long before the summer is through, when managed properly. Remember it is best to have all colonies strong, by having others to assist when necessary. Do not allow bees to sit outside and do nothing for want of room in the hive to store their gatherings. If no room can be given for boxes for surplus, or combs to hold honey for extracting, it is best to add to the number of colonies. Continue to examine into the exact state of every hive.

Ogden Farm Papers.—No. 64.

BY GEORGE E. WARING, JR.,

Referring to the ventilation of a liquid manure vat described in Ogden Farm Paper, No. 62, Mr. J. Wilkinson, of Baltimore, makes the very good suggestion that the vat be ventilated, (where the lay of the land will allow), through an underground tile drain-pipe of large size. In this case a small opening in the covering of the vat will be sufficient, and the pipe should lead from the upper part of the vat well above the water level, to some point sufficiently distant to discharge the emanations where they will do no harm, and enough lower than its starting-point in the vat to secure the down-hill flow of the heavier and cooler air; if the drain is placed three feet underground, Mr. Wilkinson says that it will be sufficiently cool for the air in warm weather to maintain a constant flow towards its lower end. By this arrangement fresh air will constantly be drawn in at the surface of the vat, and the foul air from the manure will flow out through the pipe. To prevent opposing winds from interfering with this flow, the mouth of the pipe should be thoroughly shielded against any direct blast. I have never tried this plan, but I see no reason why it should not work satisfactorily. Mr. W. accompanies his letter with a diagram showing his method for collecting surface water for storage during drouth, so that the rainfall on a large area can be conducted to the central pond or reservoir without danger of washing away the earth by accumulating in too strong a flow at any point. The principle is simple, and will be applicable in a great many cases where the question of water-storage in dry weather is the most important one connected with the raising of stock. It is simply to arrange shallow surface-gutters, (which may be sodded, and which will form no obstruction to the mowing-machine), in such a manner that each one shall accumulate the water of only a limited area, each running independently of the others to the central reservoir. The areas drained by all of these being equal, all will carry an equal amount of water, and with a little care in adjusting their fall, none will at any point have a sufficiently rapid flow to wash away the surface. The area drained may be steep or of gentle slope, according to circumstances, but when the water has accumulated in the gutter, it should be carried at such an angle to the slope of the ground as will prevent its getting up too much speed. If the inclination of the gutters is slight enough, the system may be used for collecting water even from plowed ground.

G. B. S., Amelia Court House, Va., describes a large tract of flat ground of excellent quality which is frequently flooded by the rise of a creek running through it, and of branches which come in from the surrounding hills. Much of the land is soft, some of it is underlaid by quicksand, and the outlet is not low enough for satisfactory drainage by open ditches. He asks how he shall arrange for its drainage with tiles. I have not generally found that large areas of this sort, having an insufficient outlet, are made satisfactory by tile drainage, especially if the tile-drains are long. Soil of this character is often very silty, and it is difficult to give enough fall to keep up a regular flow that will carry the silt to the outlet. If tiles are to be used at all, it is better that they should be only for short branches, each with its independent outlet into an open ditch, the mouth of each being protected against vermin and against the action of the current in the ditch—all of which requires watching, and is somewhat troublesome. As a general rule, the money that such drainage costs would be spent to better advantage in the improvement of higher-lying land, but there is a method by which these large low meadows may be drained, and the cost of which, if the land is of good quality, will not be very great, and will be well repaid; that is, the system that is in universal use in Holland. The land to be cultivated should be separated by dykes or embankments from the sources of external water, and should then be artificially pumped out to a sufficient depth to secure the easy drainage of the soil by tiles or by open ditches. In alluvial ground, such as my correspondent describes, depth of outlet is the chief thing needed; this being secured, drains at quite distant intervals will keep the land dry enough, perhaps even fifty or one hundred feet apart. The water is to be removed in such cases by a pumping-wheel or by the Archimedian screw, either of which can be easily and cheaply constructed, and can be worked by a small windmill, or, in such a case as that described to me, by the water-power of the creek running through the land. The details for the work cannot be fully explained without the aid of diagrams, and they would vary for each case to be considered, but there are thousands of acres of good land in every state that may be easily reclaimed by this system, and which cannot be satisfactorily treated by any other that I know.

The same writer has found difficulty in keeping his deep-cans of milk at a low enough temperature, and has thought of surrounding them with dry earth as a cooling medium. This would hardly be satisfactory. Earth, as he proposes to use it, would not be rapid enough in its action, nor would it probably reduce the temperature sufficiently. But there need be no difficulty in cooling with water. If there is no spring or well available, a small, deep cistern will answer a perfectly good purpose. The water may be pumped with a very small windmill, one costing less than $100, and kept flowing in a small stream into the vat, the contents of which should be not much greater than is necessary to accommodate the cans to be used. The overflow from this vat should run directly back into the cistern, so that there shall be, when the wind blows, a constant circulation of water coming from deep in the ground, where it will be as cool as ordinary well water. The same water being used over and over, no considerable amount will be needed, but the deeper the cistern is made and the narrower, so as to have a good proportion of its water in contact with its walls, the cooler will it be. The suction-pipe should come from the lower part of the cistern.

Mr. S. asks advice about a Jersey cow, whose milk has such a strong flavor as to be disagreeable, and to spoil the flavor of the butter of his whole dairy. My advice in such a case would be brief: get her into the beef barrel as early as convenient.

Much has been said about an experiment made by Mr. Linus W. Miller, of Chautauqua County, New York, in keeping his dry cows two winters in succession on a diet of three quarts of corn-meal per day, without hay, straw, roots, or any other food. I have watched this experiment with some care since it first came into notice, but without much confidence that it would be continued so long as it has been, or that it would result so well as in Mr. Miller's case it seems to have done. His statements seem to be well endorsed, and he claims that his cattle have been kept in perfectly good condition, and have come out in the spring rather better than usual, as shown by their general condition, and by the fact that the returns from his cheese factory show an increase of milk over previous years. I supposed that the result of this experiment would be a diseased condition of those parts of the digestive organs of the cows which are intended to deal with coarse and rough forage, and which, in a state of nature—and thus far under conditions of domestication—are kept constantly at work; but the cows in this experiment seem to have come through two seasons without having their cud-forming and cud-chewing capacity at all diminished. It is to be hoped that others will experiment in the same direction, for certainly if we can keep ordinary-sized cows in good condition, through the winter season at the cost of only three quarts of corn-meal per day, we shall have gained a very great point. I cannot try such experiments, as my cows are all thoroughbred breeding animals, and too valuable to tamper with; the experiment would involve not only the question of the cow's health, but the character of the progeny, which is very important. Those whose cows bear calves only that they may give milk, might try it with very little risk, and with a very good prospect of economy in their winter feeding operations. If I were going to advise in this matter, I should say that, Mr. Miller's experiment having succeeded, it would be wise for all situated as he was, to feed three quarts of corn-meal per day, and, in addition to this, five pounds of cut hay, making a compromise between the two systems without entirely losing the benefits of either. In this case, supposing a cow to consume twenty pounds of hay a day as ordinarily kept, the saving would be the difference of value between fifteen pounds of hay and a little more than five pounds of corn-meal.

Mr. Miller's theory is, that the action of the first three stomachs of the cow is not essential to her health, but is only nature's way of enabling her to macerate and grind the coarse and bulky food that she finds in a wild state; and that it is as legitimate for man to substitute for this expensive style of preparation, (expensive because it requires an immense amount of labor on the part of the cow's system), the preparation of the more concentrated kinds of vegetable food by the cheaper means of artificial grinding.

A correspondent in Du Quoin, Ill., asks: "What is my Jersey cow worth?" He says an ordinary cow, giving three-quarters of a pound per day of butter worth thirty cents per pound, barely pays for her keeping. His cow, (seven-eighths Jersey), gives 1½ lbs. per day worth 45 cents per lb. He says that in his experience this *proportion* of product would hold good throughout the year. He finds by his record that his native cow in winter with 4 quarts of meal and 4 quarts of bran per day consumes 20 lbs. 12 oz. of coarse feed daily, while the Jersey with the same grain, requires but 9 lbs. 12 oz. of coarse feed per day, or a daily saving of 11 lbs. of hay, worth last winter one cent per lb. He thinks that the answer depends on an "if," *if the common cow pays for her keeping*, then his Jersey is worth a great price. That she does pay for her keeping may well be doubted, but that the Jersey cow, as he describes her, is very profitable, there can be no doubt. To answer his question directly, and say how much the animal is worth, would be impossible, but there certainly can be no comparison between her value and that of the inferior animal described. He gives the following on feeding, which agrees with my own opinion based on experience and observation: "For milk, we would feed hay and bran; for butter, we would feed corn-fodder or meal. Corn-meal has always reduced the flow of milk, but increased the amount of butter;

corn-fodder produced about the same effect. Would prefer corn-fodder as a steady feed to hay. Yellow corn-meal will color butter much better than white meal. Early-sown rye makes excellent winter pasturage, and is very profitable, but the best fall and early winter feed is sorghum planted thickly in drills." (This last sentence applies to hot climates.)

I have recently had a visit from Mr. Edward Burnett, of Southborough, Mass., to whose operations I have before referred in these papers. He has adopted in his operations the only system that now seems to me consistent with profitable farming in the older settled parts of the country, that is, the principle that the way to make up for poor soil and an expensive system of cultivation, both of which help to cut us down in our competition with the west, is to produce special articles *of first-rate quality*, and to bring them to the favorable notice of those who are willing to pay extraordinary prices for what suits their fancy. Mr. Burnett is a large producer of butter, for which he gets a round price, mainly from private customers, but he has gradually worked into a large trade in pork. He feeds, on his own farm and others, a good class of well-bred shotes, giving them no refuse of any kind except skimmed milk, and making up the rest of their diet with corn and oats, and a certain amount of clover and corn-fodder. These pigs he kills at the rate of about one hundred per month from November until March, dressing an average weight of about one hundred and fifty pounds. Everything about his establishment is as cleanly and well arranged as in a large public abattoir, and he gives his personal attention to every part of the business. This perfect cleanliness of feeding and handling being well known, he has not yet been able to keep pace with the demand for his hams, bacon, jowls, sausages and lard. The lowest price for which any part of the animal is sold, is twenty cents per pound, net cash, at which price he has already contracted to deliver six thousand pounds of lard next winter. His theory is, to sell nothing whatever with the name of his farm attached to it except for a price considerably above that of the ordinary market, and so far as possible, to keep nothing that will not readily command this higher price, and he is able to live up to his theory more closely than most of us are.

It is a little curious to see how all of the better farmers at the east are adopting very simple rotations. They often begin with quite an elaborate series of crops such as the books recommend for the improvement of the soil, but they generally come around after a little experience to something like that which Mr. Burnett has "worked into": first year, corn on an inverted sod, with a good dressing of stable manure; second year, mangel-wurzel, very heavily manured; third year, barley, seeded down in the spring with grass; and then grass for years afterward, so long as top-dressing will keep the crop good, or until the land is again needed for corn. I asked Mr. B. whether it paid him to raise corn. He said that it did not, but that he considered it absolutely necessary to have the fodder to feed his cows in winter—an end that he could gain more satisfactorily by sowing his corn thickly in drills for fodder and not troubling himself about the grain at all.

I am often at a loss to know how to treat reports concerning the large yield of very small herds of cows which have been selected with great care, and which are treated as well as cows can be. I am sometimes disposed to doubt their truth, but thus far investigation has always shown them to be well founded. A cattle-dealer in Connecticut reported a Jersey cow that yielded 574 lbs. of butter in a year. Thoroughly as I am in favor of the breed, I refused to believe this statement until the owner and his wife, Mr. and Mrs. J. H. Sutliff, of Bristol, Conn., who are known to be trustworthy people, made affidavit that during the whole year they had employed no servants in the stable or dairy, but taken direct personal care of everything for themselves, and had kept a careful record. The cow came in Sept. 24, 1871. "The trial commenced Oct. 1, 1871, with the following results: October, 60 lbs. 8 oz.; November, 53 lbs.; December, 55 lbs. 5 oz.; January, 57 lbs. 4 oz.; February, 54 lbs. 2 oz.; March, 54 lbs. 6 oz.; April, 47 lbs.; May, 49 lbs. 7 oz.; June, 45 lbs. 9 oz.; July, 37 lbs. 12 oz.; August, 31 lbs.; and September, 30 lbs. Total, 574 lbs. 5 oz. During November considerable milk was sold, so that less butter was made." This is the champion Jersey to this date, the largest authentic report before this having been that of Mr. Motley's cow, Flora, producing 511 lbs.

Another Connecticut man sets us all a very good example—Mr. F. M. North, who lives at East Berlin. He has seven acres of mowing and pasturage, and keeps three grade Jerseys, bred by himself. These cows calved Feb. 26th, Feb. 27th, and March 7th, 1874, and an exact account of their product was kept from March 1st to December 15th, during which time 700 quarts of milk were consumed in the family, (estimated), and 790 quarts were sold, yet in the time mentioned, 1,105 lbs. of butter were made, being an average of 368⅓ lbs. per cow. In September it took a trifle over 7 quarts of milk to make a pound of butter. In November, when the cattle were fed eight quarts per day, of bran and meal, it took but 5½ quarts. I know nothing of the circumstances of this case, save that the account is given in great detail, with name and date, and is contributed by W. H. Yeomans, of Columbia, Conn., to the Live Stock Journal. From what I know of the capabilities of the breed when carefully kept on small places, I do not question the truth of the statement.

Mr. S. G. Livermore, of Robin, Iowa, and J. W. Riley, of Troy, Ohio, both send reports of great success with their Jersey cattle, but they and all others who favor me with such letters will understand that, while I read them all with great satisfaction, it would not be fair to the general readers of the *Agriculturist* to give too much space to such details concerning a single breed.

Mr. William Spicer, of West Hallock, Ill., reports experiments with the deep-can system, and I regard the adoption of this system so important to the general dairy interests of the country, that I make no apology for my frequent reference to it. Mr. S. has made three comparative trials with cans holding 38½ lbs. of milk, and with ordinary milk-pans. On the first trial, the milk being cooled before setting, the temperature of the room 50° to 55°, and the cream being taken off forty-eight hours after setting, there was made 1 lb of butter from 21$^{9}/_{10}$ lbs. of milk in cans, and 1 lb. of butter from 21$^{6}/_{10}$ lbs. of milk in pans. In the next experiment the conditions were the same, except that the temperature was from 45° to 50°; the cans made 1 lb of butter from 19$^{9}/_{10}$ lbs. of milk, and the pans made 1 lb of butter from 22$^{2}/_{10}$ lbs. of milk. In the next trial the temperature was from 55° to 60°. The cans made 1 lb of butter from 22$^{1}/_{10}$ lbs. of milk, and the pans, 1 lb. of butter from 21$^{3}/_{10}$ lbs. of milk. He says, "We made several more trials with about the same results, and notwithstanding the decision of the Solebury Farmers' Club, or the predictions of old dairymen, we are setting milk in deep cans, each of which yields about 3½ inches of solid cream and a superior quality of butter."

This experiment, like many others that I have published, supports my original view that there is neither a gain nor a loss of quantity resulting from the deep-setting. In any proper setting, deep or shallow, all the cream is undoubtedly raised, but the advantage in uniformity of product, improvement of quality, and saving of labor, secured by the deep-can system, constitute advantages which it seems to me that no unprejudiced man can disregard.

ASSISTANCE IN HATCHING EGGS.—Assistance is sometimes of great importance in hatching, especially in the case of the thick shells of the eggs of Asiatic fowls and of ducks. It is a good plan to sprinkle or dip the eggs in tepid water every day at noon for a week before hatching. The shell cracks more easily. When the shell is chipped, if the bird does not come out in a few hours, it should have just a little help, and but a little. Break the shell a little each side of the chip, and tear the membrane where it is dried. Great care must be taken not to draw blood. Make only just room enough for the bill and head to get free. Having done this, put the egg back again under the fluff of the hen, and watch the progress made in hatching two or three times a day. We save the lives of a good many chickens and ducks every season by a little timely aid while hatching. If kept quiet and carefully handled, no harm will result to mother or brood.

CARE OF ROOT CROPS.—Roots can not be grown successfully without perfectly clean and frequent cultivation. The ground may be rich but yet produce a poor crop of roots if weeds are permitted, or if the soil is allowed to become dry and hard. An extra outlay of $5 or less per acre for labor in weeding and cultivation, may very easily make a difference of $25 or $50 in the crop. The same is true of corn, but especially of roots, which insist on having a mellow, clean soil, or they refuse to grow.

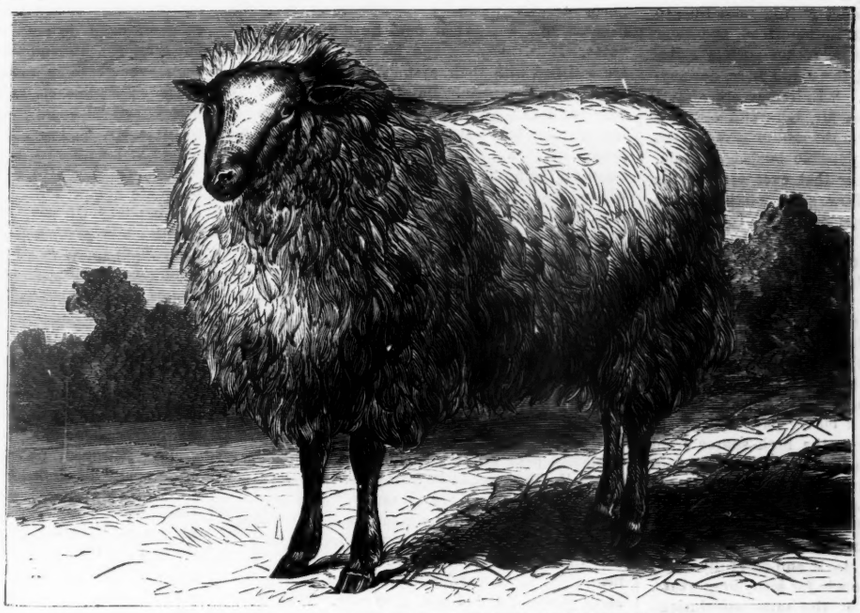
Spelling Matches—Keep them Going.

The "Spelling mania" has been very contagious during two or three months past. One can hardly take up a newspaper, printed anywhere from Maine to Nebraska, without finding in it an account of one or more spelling matches. Probably not less than twenty thousand such contests have been held this year, in which an average of fifty persons have been directly engaged, and all of these million people, young and old, have performed a deal of studying over the right orthography of a very large number of words. Then an average of over 100 persons have attended these matches, as spectators, and carefully watched the spelling of every word "put out," so that at least 3,000,000 to 4,000,000 people have improved their spelling ability to a considerable extent. We know that in a single locality at least one hundred families were actively engaged, parents and children, morning, noon, and night, in going over and over the spelling books and lists of "test words," while in the shops, stores, and manufactories, the right spelling of this and that word has been the main topic of conversation. Even in a barber-shop, the retailing of scandal and unimportant news has given place to spelling discussions; and had not the "Beecher Trial" come in to claim extraordinary attention, perhaps three-fourths of our whole population would have had "spelling on the brain."

We look with a good deal of favor upon all this. Even if it stop right here, the influence will continue many years. Everybody will be more careful about sending out letters and other written documents defaced with badly spelled words, which always give the impression of illiteracy. These matches have afforded much amusement, and that of a far more useful character than a majority of the entertainments commonly supplied. For example, take two benevolent societies we know of. One of them held a "fair," for which a lot of fancy articles, of nearly a useless character, were got up with much time and expense, and the attendants were dragooned into buying what they did not want, and had no earthly use for—all "for the good of the cause." The ending, and chief attraction of the af-fair, was a sort of "kissing bee." The net proceeds were $65, including the income of a lottery ring-cake, and lottery grab-bag. The other society had a spelling match, to which a few leading citizens lent their influence as participants, and were followed by the young people generally. The only preparation was the useful spelling study in families. The net result of the quiet but amusing entertainment, was over $75 taken at the door. This last is only one of several thousand similar doubly useful enterprises of the present year. We sincerely hope the spelling campaign will reopen next autumn with increased energy, and also that the good old plan of choosing sides and spelling matches in all our public schools will be the order. They will furnish legitimate entertainment, having no unhealthful moral tone, and we shall, as a nation, become far better "spellers."

The Beacon Downs.

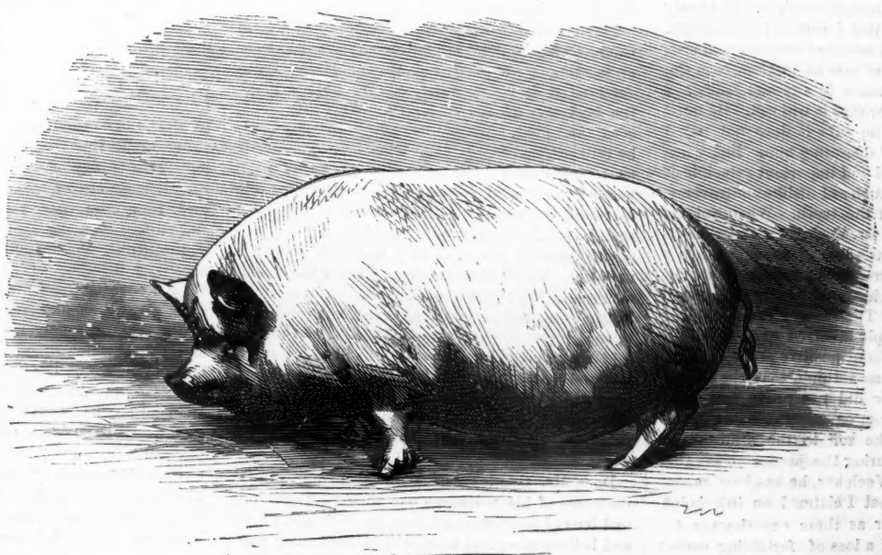
The importance of giving attention to the breeding of classes of sheep which will be adapted to the needs of the various localities of the United States, has been frequently referred to. The Merino has been improved until it suits our purpose in some districts, but that purpose is wool of a certain grade only. Where there is a demand for coarse or long wools, or for mutton, different classes of sheep are required. We want a sheep larger than the Southdown, but of equal quality for mutton, and with a heavier fleece; and one finer than the coarse fleece of the pure Cotswold. The Lincoln and Leicester do not seem to be adapted to our climate or methods of agriculture, and are out of the race. We have the Cotswold and Southdown, but these fill only a very small part of our needs. In Great Britain there are some thirteen distinct breeds, which occur to us as we write, each of which is paramount in its own exclusive domain, and yet that country is smaller than any one of several of our states, and but very little larger than the State of New York. How much greater scope then is there with us, with our immense territory, marked by great diversity of soil, climate, and surface, for a much greater diversity of character in our sheep. Unfortunately our sheep have been deteriorating instead of improving, and our so-called native sheep, while they present variety enough, their difference is mainly in degree of inferiority. As an illustration of a praiseworthy effort to meet the want referred to, we give the accompanying portrait of a sheep from a flock raised by Mr. Crozier, of Beacon Farm, which were produced by a cross between an imported Southdown ewe and the Cotswold ram, Kingston, imported in 1868. This ram is a choice animal, and has been the winner of many prizes in England, Canada, and the United States. The original parents of these sheep were well selected and of choice quality. The cross was made in 1868, and the produce of this ewe and ram, have been bred in-and-in with the result of producing a sheep of which the engraving is an exact representation. So far these sheep have exhibited good constitution, and produce a heavy fleece of combing wool, much superior in quality to, and of equal weight with that of the pure Cotswold, and much closer and denser upon the sheep's back, while they yield a carcass of mutton as good as, and one-half larger than that of the pure Southdown. Mr. Crozier states that he has none of these sheep to dispose of, as he intends to breed them for two years longer, until assured that he has a standard breed. He gives to them the name of "Beacon Downs." We hope Mr. Crozier will realize his anticipations, and that more of our intelligent breeders will turn their efforts in the same direction. It must be remembered, however, that a breed can only be produced and thoroughly established, by long and skillful effort, and by the most judicious selection of parents, with a very distinct idea of what is aimed at.



BEACON DOWN RAM.—BRED BY WM. CROZIER, OF BEACON FARM.

The Middlesex Breed of Pigs.

The pig which received the first "prize of honor" at the recent exhibition of fat animals at Paris, (France), was one of the Middlesex breed. Its portrait, here reproduced from a French journal, shows it to be a very fine specimen. The exhibition referred to, is held annually, under the auspices of the Minister of Agriculture and Commerce, for the reception of animals fattened for the butcher, of living or dead poultry, of grains, of farm products destined for industrial processes, such as flax, hemp, hops, etc.; fruits, fresh, dry, and preserved, fresh vegetables, honey and wax, cheese, butter, etc., as well as agricultural machines and implements. We take the opportunity of making this annual exhibition known to exhibitors in this country, as it may become an important means through which to make the great variety of such products raised by us extensively known abroad. By a decision of the Minister of Agriculture, the next exhibition will be opened for the reception of the products above enumerated, from the 14th to the 19th of February next, and will be open from the 19th to the 23d of February, (1876), inclusive. The animal here represented, is a sow, white in color, aged less than one year, and weighing over 500 pounds. She was bred from stock imported from England, by Mons. Emile Pavy, by M. Poisson, director of the "farm-school," (agricultural college), of Laumoy, France. The extreme precocity of this race of pigs, is one of its chief characteristics, for it has long been known as a "butchers prize" pig, having taken premiums at the Smithfield (London) Club shows, several times since 1841. It is an offspring of the famous old Yorkshire breed, but has been subjected to a successful course of improvement, which certainly has not ceased to continue in operation under the hands of the French breeders. Whether or not this breed would fill a place in our agriculture, is not yet known. Yet from study of the points of this pig, it is easily seen that it possesses many valuable qualities. As an example of what may be done in the course of a few years in improving a race of pigs, it is noteworthy, more especially for those who are honestly endeavoring to build up a class or breed which has many good characteristics, such as our own Chester Whites. This class of pigs has unfortunately suffered from ill-advised or ignorant breeders, but if those interested in its improvement, will honestly and skillfully work for a few years longer there is reason to hope that they may permanently establish an excellent type. Although we have such excellent breeds as the Berkshire, Poland China, and Essex, yet these are either black or black and white, and there is a prejudice existing amongst a large class of people in favor of white pigs, which makes it desirable that we should possess at least more than one white breed of good character. This refers more especially to the neighborhood of the great eastern cities, where there is a demand for pigs rather than for hogs, and in which a rapidly maturing white pig of a pure breed, with small bone and offal, and a good meaty carcass, is needed.



FIRST PREMIUM MIDDLESEX SOW AT THE PARIS EXHIBITION.

Walks and Talks on the Farm.—No. 138.

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"I believe," writes Geo. Geddes in the "Country Gentleman," "that Mr. Lawes' largest crops of wheat cost him more per bushel than those of medium yield."—Mr. Geddes should take time to study the experiments at Rothamstead, and their practical bearing, before he makes such a statement. There is no profit there, nor here, nor anywhere in poor farming. "Extremes are almost always costly," continues Mr. G., "and ordinary farmers can not safely take the risk involved in the attempt to raise the last possible bushel of grain, or to raise the largest steer that ever went to the butcher. We must follow safer methods, and depend more upon average results."—I have said the same thing a great many times; only that I want the "average result" to be a great deal higher and better than they now are, either on my own farm or on that of Mr. Geddes. "We try to read all that the men who are devoting themselves to scientific investigation," continues Mr. G., "write for our instruction, and we try to learn something from each other's doings. But when we read in 'Walks and Talks on the Farm,' that the manurial value of a ton of clover hay is $15.82, we are silent out of respect to the high source from which we receive the information; and we conclude that when the owner of Moreton Farm has drained all his land, removed all stones and other obstructions, and once thoroughly cultivated every part of his wide fields, and fed out many hundred tons of clover hay to his stock, and carefully saved and applied the manure made for many long years, he will probably arrive at the same conclusions that have been reached by those who have already had this experience."—I have no doubt this is true, but who are the men that have had this experience? John Johnston is one of them, and we all know that he has found it eminently profitable. And though 84 years of age yesterday (April, 11th), he is just as enthusiastic in regard to the pleasures and profits of *good* farming, as he ever was.

Mr. Geddes some months since gave an account of two fields of wheat—one after barley, and the other after summer-fallow. He thought the results showed that it was not profitable to summer-fallow. I endeavored to show that the experiment did not prove this. I did not, and I do not now wish to be understood as advocating the practice of summer-fallowing, indiscriminately. It is only the principles involved that I care anything about. Practices are changed or modified by circumstances, but principles are as true here as in Onondaga Co. It may not pay Mr. Geddes to summer-fallow. I do not say that it will, or that it will not. He must be his own judge. If he says it does not pay, I should never think of disputing him. But when he assails a fundamental and important principle of scientific agriculture, much as I dislike controversy, I am willing to defend the truth. When Colonel Waring intimated that Dr. Voelcker's experiments indicated that there was a loss of nitrogen when a soil was repeatedly stirred and exposed to the atmosphere, Mr. Geddes hastened to bring forward facts in confirmation. The facts I cared nothing about. But the principle involved was too important to be given up without positive proof. I showed very conclusively, as I think, that the experiments of Dr. Voelcker did not prove that there was any loss of nitrogen, or other valuable plant-food, from exposing the soil to the atmosphere. And I must do Col. Waring the justice to say that after talking with Dr. Voelcker, he has been candid enough to admit all that I claimed on this point. In other words, so far as these experiments go, there is no evidence of a loss of fertilizing matter by stirring and exposing the soil.—But Mr. Geddes still sticks to his facts. My next move was to show that these facts did not prove what was claimed for them. I do not say that they prove the truth of my positions. In fact, to be strictly candid, I do not think they *prove* anything. Mr. Geddes seems to think so too; for he now calls a meeting of twenty of his neighbors, and they have a talk on summer-fallowing. "All of them," says Mr. G., "are raisers of wheat, and but one of them has wheat growing on land that was last year summer-fallowed."—What of that? I could get twenty wheat-growers here, none of whom practice summer fallowing. And they are men of full average intelligence. Perhaps it is my misfortune, but it never occurs to me that a scientific question can be decided like a political one, by the majority of votes. If Mr. Geddes and his twenty neighbors are satisfied with their system of farming, I have no right to complain. But there are some of us who are looking for something better; we want larger crops, better stock, cleaner land, and greater profits. We want to keep some of our boys at home on the farm. We do not want *all* of them to be lawyers, doctors, merchants, engineers, contractors, mechanics, and manufacturers. We are invoking the aid of science, and never in the history of agriculture, probably, were so many men with trained intellects investigating the laws of husbandry. But Science does not give us recipes, she gives us principles, and leaves us to apply them. She will not help a lazy, shiftless, careless farmer. But to the real industrious, energetic, thoughtful, painstaking man, who is willing to learn and ready to practice, she is prepared to give hints which will add greatly to his comfort and profits.

Science does not say to such a man, "summer-fallow." This would be quackery. She does not say "raise clover and plow it under." She does not say "underdrain." She does not say "plow deeper." She does not say "plow shallower, or with this or that kind of furrow." She says: "be a man, think for yourself, study, observe, experiment. Help yourself and I will help you. Take hold; wake up; push ahead. Do not be satisfied with what you know, or with what your neighbors know. They will laugh at you. Heed them not. You may fail at first, but you shall prosper in the end. There are great improvements to be made. There is much to be learned."

The Deacon stopped me. "I don't see what you are driving at," he said, "Mr. Geddes is wise to call in his experienced neighbors, and ask them whether he had better summer-fallow or sow barley as a preparation for wheat. 'In the multitude of counselors there is wisdom.'"—"A Deacon should quote scripture correctly," I replied, "it is 'in multitude of counselors there is *safety*,' and I have no doubt these counselors gave Mr. Geddes very *safe* advice. 'Do as you have done,' they say, 'follow the old beaten track.'"

This is safe advice. I have no objection to it. All I have to say is, there is a better way. The system of farming recommended by Mr. Geddes, as I understand it, is not economical. We do not make the best use of our materials. We waste seed, labor, and food. We can not afford to raise beef, he tells us, and at the same time he recommends us to plow under our crops of clover. I have heard him say he does not sell straw, but scatters it around the yards by wagon-loads at a time; and then he laughs at me for saying a ton of clover hay (say 5 tons of green clover) is worth $9.64 for manure. And this, by the way, I never have said, all I say is this: *If* a ton of wheat-straw is worth $2.68 for manure, *then* a ton of clover hay, or five tons of green clover, is worth $9.64. I have never said that clover hay is worth $15.82 per ton for manure. All I have said is that *if* nitrogen, phosphoric acid, and potash, are worth so and so per pound, *then* clover hay contains enough of these valuable ingredients of plant-food, to make it worth $15.82.

Does Mr. Geddes buy artificial manures?—Do not some of his neighbors use them?—Thousands and tens of thousands of tons are sold, and I hope and believe more and more will be used every year. Mr. Geddes tells us that his neighbors are good and intelligent farmers. I can say the same thing of mine, I do not know a better farming section. I say nothing of the Deacon and myself, except that we are improving. But a mile or two away from us, there is as good land, and as good farmers as any in the state. These men have been buying superphosphate at $45 per ton, to sow on their wheat; and this winter one of them sold me choice early cut clover hay at $10 per ton, and the day I visited him, he had been scattering straw about the yards and sheds two feet thick, to get rid of it, and "make it into manure." This man has got a fine farm, and he is an intelligent, enterprising, and what we call a successful farmer. But I do not hesitate to say that such farming is not economical. I do not think the farmers in this fine section, with land worth from $125 to $200 per acre, average more than 125 bushels of potatoes per acre; 35 bushels shelled corn; 25 bushels of barley, and 20 bushels of wheat. Does the best town in Mr. Geddes's neighborhood *average* any more? and with such crops on such land, does a well educated, active, and industrious farmer get adequate compensation for his time, care, labor, and capital? If not, why not? My answer is *because our crops are not large enough per acre.* And I am happy to say that I have received hundreds of letters from farmers in different parts of the United States and Canada, telling me that my point is well taken.

Now how are we to get larger crops per acre? The atmosphere perhaps furnishes us all the carbonic acid which plants require; and the rains and dews furnish us a small quantity of nitrogen; but not nearly as much as we need to produce large crops. Nitrogen, phosphoric acid, potash, etc., are annually developed from the soil. The amount so furnished, varies greatly according to the character of the land. On light sandy soil it may not be sufficient to furnish food for more than a quarter of a ton of hay, or 5 bushels of wheat to the acre; or it may be sufficient on some soils to furnish food enough for a ton of hay, or 20 bushels of wheat an acre. Whatever the amount is, that is what I call the normal yield of the soil; cultivation may accelerate the development. It may procure us a larger quantity in a given time. A meadow which produces less that half a ton of hay to the acre, if plowed up, well worked, and seeded down again, may give us two tons to the acre. This is due in a good degree to the decomposition of the roots, which have been formed from the slowly developed matter in the soil for some years past. This is not the normal supply of plant-food.

In Mr. Lawes' experimental wheat field, the annual yield of wheat for over thirty years, without manure of any kind, and the crop of grain and straw all removed, has been about 15 bushels per acre. This is the normal yield of wheat on that soil, with two plowings each year, and hoeing between the drills, to keep the crop clean. I have used this well established fact to illustrate what Mr. Geddes calls my "pet theory of the advantages of raising, at long intervals, large crops of wheat by summer-fallowing." I hope the careful readers of the *Agriculturist* understand my views better than to limit this theory merely to summer-fallowing. That is only one of the means I have suggested. Raising clover, peas, mangels, turnips, mustard, rape, corn, oats, rye, buckwheat, and grass, and *feeding them out on the farm*, carefully saving and returning the manure, is just as much one of my "pet theories." The principle is the same. What I contend for is, that we must in some way get a greater accumulation of available plant-food in the soil, especially for our best paying crops, and those which require the largest amount of labor to the acre. There are but two ways of doing this; 1*st*. Buy the plant-food. This we can do in artificial fertilizers. The nitrogen in this form will cost us 20 to 30 cents per pound. We can also buy stable manure from the cities. We can also buy hay from such of our neighbors as are willing to sell, or bran, oilcake, grain, and other foods, and feed it out to cattle, sheep, and pigs. There are some who can get fish, sea-weed, swamp muck, etc. 2*nd*. We can get this accumulation of plant-food, by saving that which is annually developed from the soil. And it is right here that we need all the aid which science and experience can furnish us. It is the starting point of good farming. If you have a good, calcareous clayey soil like that of Mr. Lawes', which will produce 15 bushels of wheat per acre every year, I contend that it is poor farm-

ing to sow it to wheat, or barley, or oats, or corn every year, and sell all the produce. It would require less seed and less labor to raise a crop of 30 bushels every other year—and the land would be cleaner. You raise and sell just as much wheat in the one case as in the other. I do not say that by summer-fallowing you would be sure of getting the 30 bushels every other year, or if you summer-fallowed two years in succession, that you would get 45 bushels every third year. I have only used these figures to illustrate my meaning. What I contend for is, that we should raise fewer wheat crops, and either summer-fallow more, (on heavy soils), or raise more clover or other crops which are consumed on the farm. I want to raise just as much wheat as we do now; but I want fewer acres and larger profits. And I want more good beef, mutton, wool, pork, cheese, butter and milk into the bargain. I believe all this can be accomplished, and I do not think Mr. Geddes should oppose my plan unless he can suggest a better one. It is easy to say you can not afford to produce good beef in the state of New York, or to raise large crops, or that we can not make farming pay. It is certain if farming will not pay in this country, other business interests will not long prosper.

"But tell me," said the Deacon, "if those large crops of barley, which you say Mr. Lawes has raised for so many years on the same land with artificial manures, have not cost more than the crops raised on the same land without manure, or on the plots less liberally manured?"—"No, they have not—and if they had, this would be no evidence against my views; for I do not advocate growing grain crops every year on the same land. I think we can get manure cheaper than by buying artificial fertilizers."—"Well, never mind all that, answer my question."—"I will, sir. For 20 years in succession, the whole crop of grain and straw being removed each year, the plot without manure produced each year on the average 1,133 lbs. of barley, equal to 23½ of our bushels per acre, and 11¼ cwts. of straw. The plot with 3½ cwts. of superphosphate per acre produced 1,439 lbs., or within one lb. of 30 of our bushels, per acre, and 13¼ cwts. of straw. The plot with 3½ cwts. superphosphate and 275 lbs. nitrate of soda per acre, produced on the average 2,795 lbs., equal to 58¼ of our bushels per acre, and 30¼ cwts. of straw. During the 20 years there has been removed in grain, straw, and chaff from each acre as follows:

No manure	48,080 lbs.
Superphosphate	58,600 lbs.
Nitrate of soda and superphosphate	124,340 lbs.

Mr. Lawes, in his lecture on "Scientific Agriculture with a View to Profit," gives the following figures of the cost of growing barley continuously on the same land with superphosphate and nitrate of soda:

275 lbs. nitrate of soda	£2	0s	0d	
2¾ cwts. superphosphates	13	9		=abent $13.50
Sowing manure	1	6		
Rent, tithe, and rates	1	15	0	
Plowing		10	0	
Scarifying		3	0	
Harrowing		4	0	
Rolling		2	0	=about $25.00
Drilling		2	0	
3 bushels seed, @ 4s. 3d.		12	9	
Hoeing and weeding		7	0	
Harvesting		10	0	
Threshing and dressing		12	0	
Total cost	7	13	0	=about $38.50

The results of the three different plots will be about as follows, leaving out of consideration the extra cost of threshing the larger crop:

1. No Manure.

23¾ bushels barley, @ $1.25	$29 37
11¾ cwts. of straw, @ 25c	2 93
	$32 30
Expenses	25 00
Profit per acre	7 30

2. Superphosphate.

30 bushels barley, @ $1.25	$37 50
13¼ cwts of straw, @ 25c	3 50
	$41 00
Expenses—abont	30 00
Profit per acre	11 00

3. Superphosphate and Nitrate of Soda.

58¼ bushels of barley, @ $1.25	$72 81
30¼ cwts. of straw, @ 25c	7 62
	$80 43
Expenses	38 50
Profit per acre	41 93

These are average results, extending over a period of **20** *years.* By selecting single years, I could make out a still stronger case. One year the yield of the plot quoted above as averaging 58¼ bushels per acre, gave over 75¾ bushels per acre, and three years later 77 bushels per acre.

I do not say that we can raise 77 bushels of barley per acre here. But I do say that we should furnish sufficient available plant-food to approximate very closely to the limit of climatic productiveness. I have several times grown over 50 bushels of barley per acre, and have never yet had my land too rich. Had it been richer, I think I should have had a heavier crop.

By referring to the *American Agriculturist*, of January last, page 14, it will be seen that Mr. Geddes got 34 bushels of barley, and 27½ bushels of Clawson wheat afterwards. His wheat on the summer-fallow, part Diehl and part Clawson, he thought, had it been all Clawson, would have been 50 bushels per acre. And he thinks this shows that it is better to grow barley than to summer-fallow. Perhaps it is. But it should be understood that I am not arguing in favor of summer-fallowing for wheat. I am simply desirous of showing that it is better to raise fewer grain crops, until we get our land rich enough to produce a higher yield per acre. I have sowed 15 acres of barley this spring on land manured last year for mangels. It would be very likely to grow 27½ bushels of Clawson wheat after the barley. But this does not satisfy me. And so, instead of sowing wheat after the barley, I have seeded it down with clover. I have another field of 17 acres, a clover sod, plowed last fall, and sown to barley this spring. This I have also seeded down with clover. My object is to get the land richer. I am practicing what I preach. I do not want, as a rule, to sow land to wheat that I do not think rich enough to produce, in a favorable season, 40 bushels of Diehl wheat per acre.

Sheep Shelters in Kansas and Virginia.

Notes of Successful Experience.

The experience of the past winter in keeping sheep on the western plains, has been of great value. It has shown that with proper protection and comfortable shelter, any breed of sheep—those even which require very great care in the east—may be kept with very little expense for feed. The open pasture is sufficient to keep them in fair condition during fine weather, and it is only when the occasional short storms prevail, that hay need be given to them. But the heavier breeds of sheep, that have been used to better fare than pasture alone, while they may be kept in ordinary condition on this fare, can be kept increasing in weight, and made to yield a heavier and better fleece, by the daily ration, in the winter, of a pint of corn per head. The experience on this point the past winter, of Mr. George Grant, of Victoria, in Ellis Co., Kansas, is very pertinent. This gentleman informs us that his flock of 7,000 sheep, consisting mainly of native ewes, with rams of pure Leicester, Lincoln, Cotswold, Southdown, Shropshire, and Oxforddown blood, and half-bred lambs, of last year, have passed through the winter very successfully, under the rational treatment given to them. The shelter or corral provided for them is a building with stone walls, covered with a peaked roof. It is square in shape, with sides about 570 feet long. A commodious house of two stories is built at one corner, for the shepherds. The corral drawn from a sketch furnished by Mr. Grant, is shown in the engraving (figure 1) given on the following page. The flock is brought into the corral every night, and is kept inside during stormy weather. At these times the sheep are furnished with hay, and a pint of crushed corn per head. At other times they are turned out to pasture in the morning, upon the prairie, and are brought back in the evening. As an experiment, a flock of 2,500 head has been kept separate from the rest, and each sheep of this flock has received a pint of crushed corn every night on their return from the pasture. The improvement in this flock has been marked, and as might have been expected, the extra feed has been profitably expended. Mr.

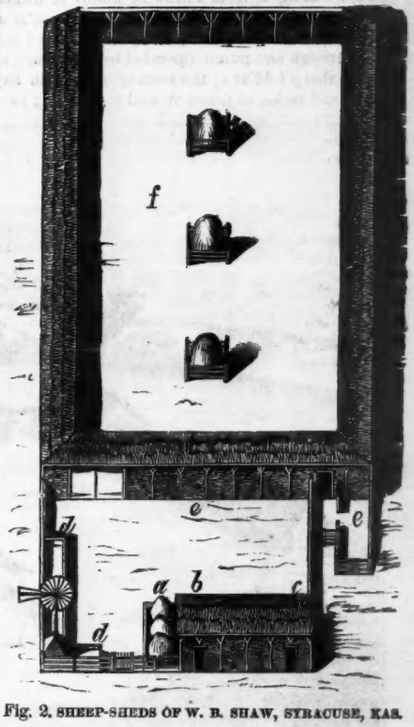


Fig. 2. SHEEP-SHEDS OF W. B. SHAW, SYRACUSE, KAS.

Grant's success has been so encouraging, that he is permitting his flock to enlarge by natural increase, until his extensive tract of land shall be well stocked.

Another enterprise in this direction, has been set on foot by Mr. W. B. Shaw, of Syracuse, which is about 200 miles south-west of Victoria, and near the eastern boundary of Colorado. In both these places the buffalo grass furnishes the chief pasturage, and the "blue joint" the hay. Mr. Shaw began with 220 sheep, a mixed flock of Cotswolds, Leicesters, Southdowns, and Merinos, which arrived on the ground in October last, and up to January 1st, grazed without interruption on the open prairie. From the first to the twenty-first of January, a succession of cold days with snow on the ground, kept the flock in the fold. During this time about 600 pounds of hay was fed daily,

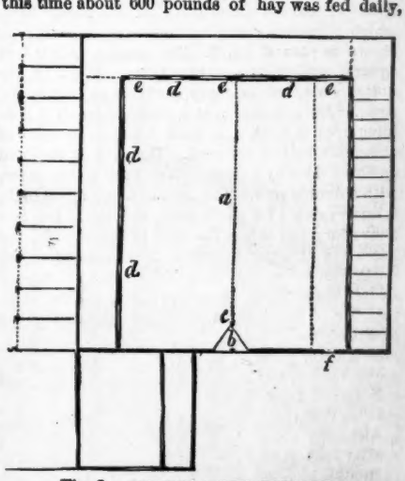


Fig. 3.—VIRGINIA SHEEP BUILDING.

which was an ample supply for the whole flock. At this period, too, the lambs began to appear, and three or four of them were lost, through inexperience rather than from the inclemency of the season. After January 21st, the sheep were again turned on to the pasture. Mr. Shaw's experience has been equally favorable with that of Mr. Grant. His shed is made of cotton-wood poles, and coarse hay

from the river bottom, and is built around an enclosure 200 feet long, by 100 feet wide. This shed is shown at fig. 2, from a drawing kindly furnished by Mr. Shaw. The stack yard for hay is seen at *a*, the horse barn at *b*; the poultry house at *c*; the water trough and pump, operated by a windmill, at *d*; the sheep fold at *e*; the feeding yard with hay stacks and racks, at *f*, and around the feeding yard

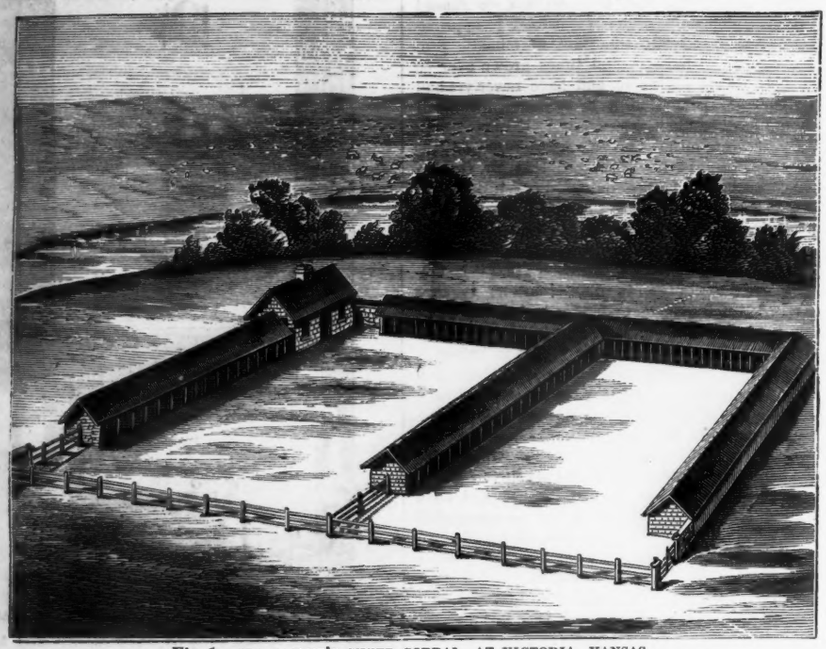
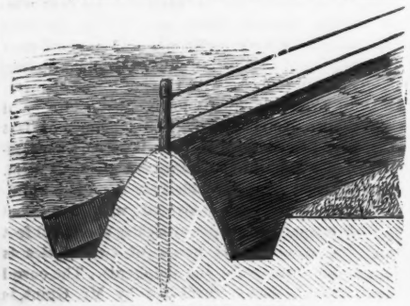


Fig. 1.—MR. GRANT'S SHEEP CORRAL, AT VICTORIA, KANSAS.

are sheds with a single roof sloping outwards. These instances show that those extensive plains, which stretch from western Nebraska and Kansas, across eastern Colorado to the mountains, are well adapted to sheep raising, from the ease and economy with which sheep may be reared upon them. We are, however, reminded by a correspondent from Virginia, of the facilities for the production of mutton and wool in that state, and much nearer the sea-board. In an article given in the *Agriculturist* last month, (May), he described something of the management of a flock of 300 sheep, and the facilities afforded by the climate and location, for raising and shipping early lambs to market. Now we have a description of his sheep barn, which possesses many conveniences, and which is shown in plan at fig. 3. The yard, *a*, is 100 feet square, divided by a hurdle fence, shown by the dotted lines, into as many portions as may be desired. The entrance is at *b*, where there is a gate hung upon a post, *c*, in such a way as to open or close each half of the yard. The yard is enclosed on three sides by a shed 10 feet high to the eaves, with a double roof. The ground floor, 7 feet high, is appropriated for sheep pens, and the three feet above for a hay loft. The shed is 12 feet wide, and has a row of separate pens 6 feet wide, upon the north side. On the other sides there are narrow doors for the sheep, seen at *d*, *d*, and sliding shutters, *e*, *e*, 8 feet long, and 3½ feet high, which are also used for entrances to the shed. The yard is closed at the front by a fence 10 feet high. There are no outside windows, and no doors but two, and only one of these, that at *f*, is locked from the outside, so that the turning of one key on the outside, secures the whole from trespassers. There is a second yard, 150 by 135 feet, upon the south side of the sheep yard, with an open shed facing the south, and divided into pens 9 feet deep, for cows or sheep, and a pig pen 35 feet square, at the south east of the sheep yard. These sheds are made of inch boards, nailed up and down upon the frame work, and the roof is of boards, with sufficient pitch to shed rain perfectly. With these descriptions of sheep sheds, and the knowledge that proper shelter is found absolutely necessary for the welfare of the sheep everywhere, those who are keeping sheep, or desiring to do so, will have no difficulty in making plans to meet their requirements in any part of our wide country.

A Fence not Worth Stealing.

We have several inquiries from the southern states for a fence that can not be stolen. It seems that in several parts of those states fences are considered a convenient source of firewood, and as a sort of common property. A correspondent writes that he has built three board-fences in as many years, and now has neither boards nor fences left of any of them. We take this to be an exceptional case, but to provide for such a state of affairs, the fence here described may be used. Posts are set in the ground, as for an ordinary fence, and several furrows are then plowed on each side toward the fence, until the earth is heaped up on the line. The earth is further loosened with the plow, and thrown up with the shovel, leaving a bank on the line of the fence, and a ditch on each side. Two No. 9 fence-wires are then stretched along the posts, making a fence that cattle can not get over or through, and that in part can not be burned, and in part can not be pulled up. If this does not meet the case, some modification of it that will occur to

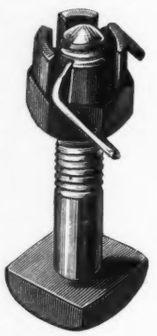


A BANK AND WIRE FENCE.

our correspondent, may be serviceable. The fence is shown in the accompanying illustration.

A New Lock Nut.

On a recent visit to the works of Messrs. Adriance, Platt & Co., Poughkeepsie, N. Y., the manufacturers of the well known Buckeye mowing and reaping machines, we were shown amongst other novelties, the lock nut here illustrated. This lock nut is manufactured specially by this firm for use upon their machines, which are not only made in the most perfect and serviceable manner, but by such careful devices as this, it is rendered well nigh impossible for them to get out of order, even in the hands of a careless farmer. The lock is of the simplest but most effective kind. The end of the screw is perforated with a small hole, and the nut is made with several openings or open slots in the upper part. When the nut is screwed tight, a piece of wire is put through the hole, necessarily passing through two of these openings in the nut; the ends of the wire are then bent so that it cannot slip out and the nut is perfectly locked. This close attention to the details of construction has made this machine a model of its class, reducing its weight and simplifying its mechanism until it is a mere skeleton of what it was years ago, but retaining everything of its strength and durability. One would think, viewing the newest mowers and reapers with all the improvements in material and mechanism they exhibit, that at last perfection in these machines has been reached; but when a "Buckeye of a dozen years ago is compared with the new "model machine" of to-day, and all the gradual improvements during those years are noted, it would seem that new surprises may yet be in store for the coming farmer. Certainly it would not be safe to say that skillful and enterprising manufacturers of agricultural machinery have as yet exhausted their inventive faculties.



LOCK NUT.

Ringing Hogs.

In 1870 there were over 25 million hogs in the United States, and the total value of the pork represented by them is a very large sum. Anything, however small it may seem to be, that can operate to increase the yield of pork from all these hogs, is in the aggregate of great importance. Whatever can reduce the labor of managing and rearing a similar number of hogs every year, will be of great service to farmers. By pasturing hogs upon clover and grass, there is a great economy in feeding them and in raising pork, as they may in this way procure their own food with but little attention.

Fig. 1.—PINCERS AND RING.

Fig. 2. OPEN. Fig. 3. CLOSED.

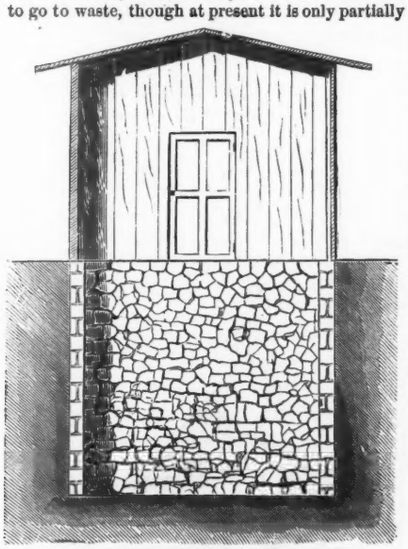
Unfortunately a hog or a pig is a difficult animal to manage, unless handled with skill. If made submissive, or rendered incapable of mischief, it is easy to manage them in a pasture, but otherwise a few hogs will destroy a pasture, or escape from it, in a few days. They are generally subdued by putting rings in their snouts, a necessary operation, but one rarely done otherwise than in a

Fig. 4.—PIG HOLDER.

bungling or ineffective manner. When done quickly and well, it is almost painless to the animal, but as usually managed, the operation is made a tedious and painful one. An instantaneous method of inserting rings is shown in the accompanying illustration. The rings can not work out, while they prevent the animal from using its snout mischievously. The ring is shown open at fig. 2, and closed at fig. 3. It is placed in a pair of pincers, fig. 1, with which the sharpened points are instantly forced through the cartilage of the snout, and locked so that the ring can not work loose. The animal is held meantime by the holder, fig. 4, into the loop of which the upper jaw is inserted, and the harder the hog pulls backward, the more securely he is held. This ingenious, effective, and very useful contrivance is made by Chambers & Quinlan, of Decatur, Ill.

Storing Brewers' Grains.

The constant increase in the consumption of barley and other grain by brewers, makes the waste of material very noticeable. The beer takes away only a small portion of the grain used. The residue, known as brewer's grains, is a valuable article of food for stock, and should by no means be suffered to go to waste, though at present it is only partially



CELLAR AND HOUSE FOR STORING GRAINS.

utilized. We have seen the grains thrown out of country breweries in large quantities, and finally used as manure. In this case much of the nutriment they contain is wasted. The use by brewers of corn-meal and rice is increasing; these nutritive substances, where they are used, add considerably to the value of a given bulk of the grains. The chief difficulty experienced by those who feed brewer's grains is, that unless properly preserved, they rapidly sour and spoil, and during the summer, when brewing is active and grains most plentiful, they are not much in demand for feeding. But they may be very cheaply preserved in large quantities for many months. The most convenient method of effecting this, is to store them in a deep cellar or pit, walled up with stone and mortar, or cement. Where there is a basement barn, this pit may be made at one end of the building, and covered with a roof, as shown in the engraving, which represents a section of the building and the cellar or pit. The pit may be at least 12 feet deep, with a clean cemented floor. The grains are packed closely in the pit, until the level of the ground is nearly reached. Then a covering of closely fitted boards should be laid upon them, and plenty of straw, chaff, sawdust, or other such matter thrown over to exclude the air. The mass in this condition sours very slowly, but at the same time ammonia is formed in it, which corrects the acidity to a great extent, and it is found to be a very palatable food for cows and pigs, in the winter or summer. At some seasons grains may be purchased very cheaply. In a recent instance an Association of Farmers purchased several thousand bushels of grains, and stored them in the manner here described, disposing of them afterwards at cost to the members, and at a handsome advance to outsiders.

The Flushing of Drains.

In some cases the sediment deposited in drains, must be removed, or the tiles will choke in time and become useless. This deposit may generally be removed, and the drains cleared by flushing them. In all systems of drains there should be inspection wells, or places called silt boxes, for the collection of the sediment. These are earthen pipes or wooden boxes, sunk from the surface a few inches below the level of the drains, as shown in the accompanying illustrations. These are closely covered to prevent access of anything that might obstruct the drains; the drain-pipe enters the box at one side, and issues from it on the opposite side. To remove sediment that gathers in these boxes or wells, a sand pump or a box-auger is used, such as is shown at figure 1. By boring into the sediment in the same manner that an earth auger is used to bore post holes, the sand or mud enters the box of the auger, and is drawn out. If round earthen pipe is used for the wells, the auger may be made to fit it closely. Then when it is desired to flush the drains, the auger is put down to the bottom of the well, and left there. The drain is thus stopped, and if this is done when the water is in full flow, it is backed up until the drain-pipes are all filled, and the water rises in the soil. When a sufficient quantity has accumulated to cause a rush of water, the obstacle is removed, and an active flow through the drains results, which carries the sediment along with it, and discharges it at the outlet. There are various ways of stopping up the drains for this purpose. For square wooden boxes, solid wooden plugs may be used, as in fig. 2, or if the wells are round, a round plug may be fitted to the drain, which operates as a water cock; this can be opened or closed, as in fig. 3; or the plug can be raised or depressed, shutting or opening the drain, as in figure 4.

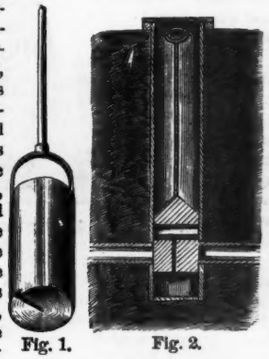


Fig. 1.

Fig. 2.

Dipping Sheep.

The dipping of sheep in spring, for the purpose of preventing and curing scab, is a practice that should never be neglected. If only to prevent or cure this troublesome disease, it would be indispensable; but it is otherwise serviceable, as a dip of a proper kind tends to promote the health of the skin, and to remedy the irritation so usual at the commencement of the warm season. Such a dip cleanses the skin from the accumulations of yolk and other secretions, which have gathered during the growth of the fleece, and thus is beneficial to the health of the sheep, and consequently to the quality and quantity of the wool. Furthermore one of the most troublesome parasites to which sheep are subject, is the tick, and this insect with its eggs, which are laid in the wool, may be destroyed by the use of a proper dip at a proper temperature. There are various compounds for dipping purposes, that are unobjectionable, but all those which contain arsenic should be avoided. They are under certain circumstances injurious to the sheep, and have often seriously poisoned those who handled them, especially if they had scratches or cuts upon their hands or arms. The carbolic dip is perfectly safe, as is also that made with tobacco and sulphur. The last mentioned dip is generally used by the large sheep owners on the plains; one of these uses 20 lbs. of cheap plug tobacco, and 5 pounds of sulphur, to 100 gallons of water. The tobacco is infused in hot water, and the liquor drawn off into a properly prepared tank, when the sulphur in fine powder is stirred into it. He dips every sheep immediately after shearing by plunging it into the bath for two minutes; it is then released into a draining pen, the floor of which drains into the dipping vat. The temperature of the dip, by additions of hot liquor, is kept up to 120°, so that the ticks and their eggs may be destroyed. This is rather severe upon the sheep, but only for a short time, and no evil effects have in any case followed this hot bath. The sheep are driven one by one along a fenced path, up to the brink of the dipping tank, and are pushed into it, plunging at once to the bottom over head and ears. Some of the liquor gets into the noses of the sheep, and causes them to stagger about for a short time after they come out, but this is found to be an excellent remedy for those troubled with catarrh or grubs in the head. The cost of the dip is two cents per sheep, and the estimated profit resulting from the two dippings given each season, in extra

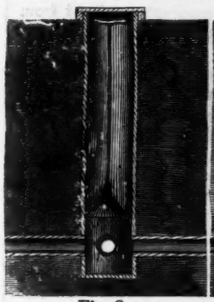


Fig. 3.

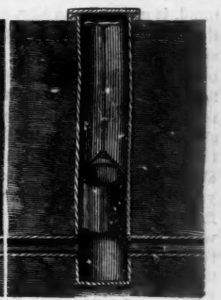
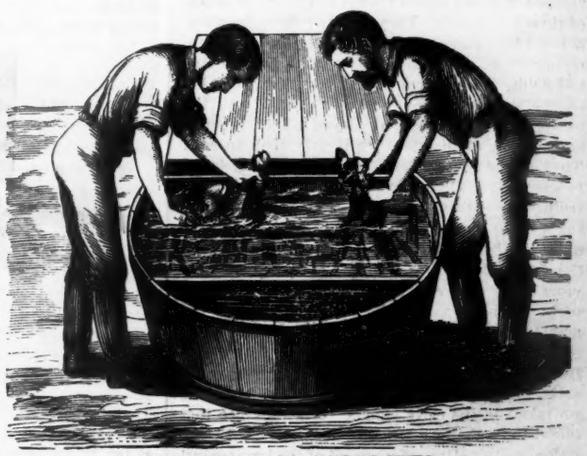


Fig. 4.

value of wool alone, is 20 cents per sheep. The sufferings of sheep and lambs from ticks alone, render it very desirable that every animal should be dipped twice each year; that is immediately after shearing, and again before winter. In small flocks, where there is no scab, ticks are partly banished by dipping the lambs only. The ticks congregate upon the lambs, leaving the newly shorn sheep, upon which only the eggs are left. But to make a perfect clearance of eggs as well as ticks, both sheep and lambs should be dipped. A dipping tub for use with small flocks, may easily be made of



A TUB ARRANGED FOR DIPPING SHEEP.

half a hogshead, boarding up each side, as shown in the engraving. The spaces boarded off, may be

filled with clean gravel, and thus reduce the quantity of liquor needed. Instead of this tub a large trough, such as is used for scalding hogs, will answer. At one side of the tub is a sloping table of boards, upon which, after having been dipped in the manner shown in the engraving, the sheep is laid, and the excess of liquor squeezed out. In this way, if everything is properly prepared, 20 sheep may easily be dipped in an hour, or if there is sufficient help to bring up the sheep, one may be dipped every minute. A barrel of hot dip should be kept near by, to replenish the tub. This matter has been often referred to, but the almost universal prevalence of the tick, and the serious annoyance it causes to both sheep and lambs, which is really a loss in wool and mutton, of thousands of dollars yearly to farmers, makes it necessary to again present it at this seasonable period, and urge its observance upon all, whether their sheep may be many or few.

The Shooting Nuisance.

With the return of summer days and singing birds, comes that chronic nuisance, the callow sportsman with dog and gun, to hunt birds and astonish the natives with his prowess and the smell of gunpowder. He has none of the instincts of sportsmen, to whom we are indebted mainly for our game laws, and for the fines and penalities that are laid upon their willful violators. The chap we have in mind, is generally an idle, ignorant vagabond from the city, who wants the fame of a mighty hunter, and so dresses in sporting jacket and long-legged boots, invests in shot-guns and metallic powder flasks, in setter dogs and whiskey. He can hardly tell one bird from another, and is more likely to shoot domestic ducks and geese, than the wild water-fowl that visit secluded spots at this season. He shoots birds upon the nests, birds feeding their young, and all birds alike, whether they are the farmer's friends or not. This great nuisance, which was formerly confined mainly to the suburban districts, is now widely scattered almost everywhere, like thistle-down along the lines of our railroads. Every depot far inland is haunted with these verdant and downy youth, who come to kill and to destroy. They by no means confine their destruction to wild animals. They stroll over your farm with as much freedom as if they owned it, shoot chickens in the absence of woodcock and quail, and broil them under your nose, worrying with their dogs your sheep and poultry, throw down your fences in digging out rabbits and woodchucks, shoot into your notices to sportsmen, or tear them down, run over the growing crops, and if interfered with, treat you to the foulest slang and curses of the grog shops. This is a great evil, and extends much beyond the personal inconvenience of the farmers, that are most exposed to the depredations of these vagabonds. They greatly reduce the number of birds, and so multiply insects that prey upon our crops, and reduce the profit of our gardens and fields. It is settled, so far as anything can be, by the studies of men best acquainted with the habits of these birds, that almost all of them at some season of the year, live largely upon insects. They are the conservative force in nature, designed to keep insect life in check. If the birds eat some fruit, they save a great deal more, by devouring the various caterpillars and "worms" that prey upon the bark and leaves of fruit trees, and upon the fruits themselves. It is only in exceptional years that we are able to get fair fruit in the older parts of the country, where there has been the greatest destruction of birds, and where insects most abound. Our finest displays of fruit come from the newer states, where there are fewer insects. The promiscuous slaughter of birds, so prevalent in the early summer, is a nuisance that ought to be abated. We need more stringent legislation, and a better enforcement of the laws against transgressors. With very few exceptions the birds should be protected from early spring to autumn. They are the farmer's best friends.

Curing Green Fodder.

Important Experiments.

Experiments in preparing and feeding fodder of various kinds are being made in France and Germany, most of which are of great value; their object is to economize the use of cattle food. In almost every department of industry it is the savings in labor and material that are cheapening the cost of production, and at the same time increasing the profits of the producers. In every form of agriculture there is a vast scope for saving in both labor and materials. Our method of feeding stock is very wasteful; the greater part of the fodder fed every winter is expended in merely keeping the cattle alive. A loss of weight or condition in all kinds of stock equal to from 10 to 60 per cent is suffered every winter. The extremes show the averages of the best and poorest keeping. There is no necessity for this; stock may be kept increasing in weight during the winter if the fodder is of the right kind and the stock is properly housed and protected. The feeding of poor unpalatable fodder is the chief cause of this loss. The appetite needs to be stimulated at the season when the greatest draft is made upon the physical condition of the animal; and to meet this need there must not only be palatable or enticing food, but there must be plenty of it. Corn fodder is largely depended upon as food for stock over a great extent of country, and its use might be made well nigh universal, as no forage plant is so easily grown as corn. Could it be preserved fresh and green for six months or more, instead of curing it and using it dry, its value would be greatly increased. That it may be so preserved has been shown by experiment, and the process is claimed to be easy, and very profitable. A correspondent in Hungary gave us his own experience some time ago, (see *Agriculturist* for Aug. 1874). Of late years a great number of French, Belgian, and German farmers have adopted the plan, and some extensive stock-feeders have used it largely with the most favorable results.

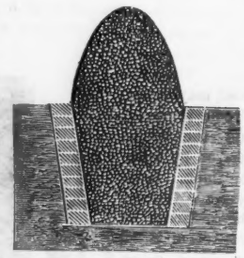


Fig. 1.—PIT BEFORE COVERING.

Several communications by prominent farmers and professors of agriculture in farm schools, have been made to the *Journal of Practical Agriculture*, of Paris, from which the following facts have been condensed, and by the aid of the illustrations, the methods in use, with the cost, may be learned. In figures 1, 2, and 3, are shown the pits or *silos*, as they are filled with the cut corn-fodder, then covered with earth and pressed down with its weight, and finally as the cut fodder has shrunk through fermentation to less than half its original bulk. These pits are about 75 feet long, 9 feet wide above, 6 feet wide at the bottom, and 6 feet deep. The sides and ends are built up of masonry laid in cement. In these pits the corn-stalks are laid evenly with care in layers of about 8 inches thick, after having been cut and exposed to the sun for two or three days. During this time the stalks lose by exposure to the sun two-fifths of their weight when first cut. A quantity of salt is scattered over every layer equal to about 66 pounds for each pit. The three pits hold about 80 tons, (75,000 kilos), of green fodder. The fodder is heaped up as shown in fig. 1, to a hight of 6 feet above the surface of the ground, and then covered with earth to a thickness of two or three feet. On the 14th of September, 1872, this work was finished. On the 15th of April following, one pit was opened and the fodder was found in perfect

Fig. 2.—PIT AFTER COVERING.

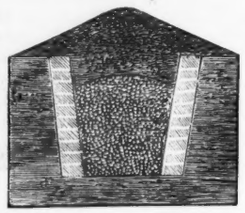


Fig. 3.—PIT AFTER SIX MONTHS.

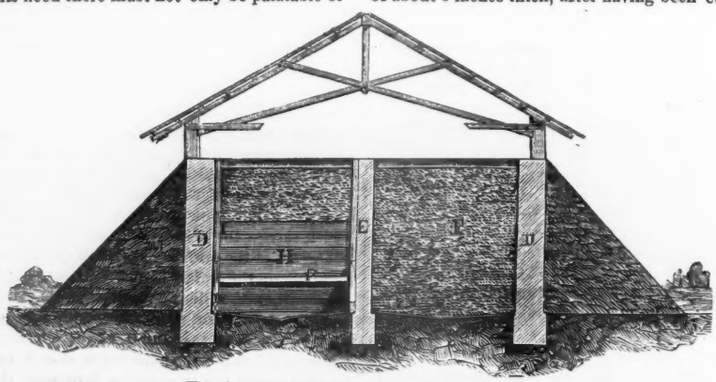


Fig. 4.—END VIEW OF PIT ABOVE GROUND.

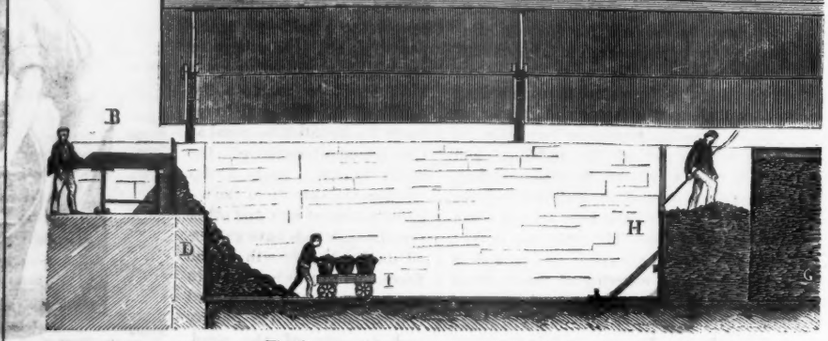


Fig. 5.—SIDE VIEW OF PIT BEING FILLED.

condition except for an inch or two upon the surface and the sides, where it was black and decayed. Its color was yellow, its odor agreeable, but the stalks had lost all their sweetness, and had acquired some degree of acidity. Twenty-four beeves were then fed about 900 lbs. daily of the preserved fodder, or nearly 40 lbs. per head on the average, which was equal to about 60 lbs. of fresh green fodder. The fodder was eaten with great relish, and only some portions of the harder stalks

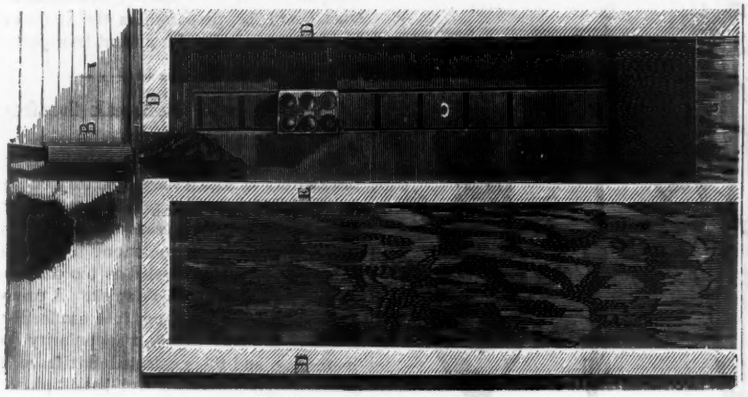


Fig. 6.—GROUND PLAN OF PIT.

were left; the corn having been cut when ripe, and having been of a large growing variety known as Giant Maize, or *Zea Caragua*. The second pit was consumed July 3d, having been preserved equally well with the first. The third was not opened until the 20th of April, 1874, 18 months after covering. The fodder was in as good order as that from the other pits, excepting that the discolored and decayed layer was somewhat thicker in this pit than in the others; a result attributed in a great degree to the gravelly and porous character of the covering earth, the preservation being due solely to the exclusion of air. In this instance the fodder was preserved whole, and the cost of cutting avoided. But when the fodder has to be cut for final use, it has been found an economy to cut it before it is stored. This system has been adopted by M. Piret, the manager of a large estate owned by M. A. Houette, at Bleneau, in Belgium. From his statement we find that he made a small experiment in 1868 which was perfectly successful, the cut fodder being withdrawn from the pit in 1869 in excellent condition. In 1870 two pits of masonry were erected above ground, protected at the sides only by banks of earth. These were found equally serviceable with those sunk below the surface, and much more convenient. Following the statement of this gentleman closely, we learn that by the aid of about 450 lbs. of superphosphate of lime per acre, he has obtained on fairly good soil 75 tons per acre of green fodder, although the average of his crop was not more than 45 tons per acre; 250 tons of this was cut by a fodder cutter driven by horse-power, cutting two tons per hour, and stored in the pits as follows. The pit was built as shown in fig. 4, which represents the section, a dividing wall in the center separating it into two parts. The cut fodder falling into the pit was carried in baskets upon a truck on a portable railway to the end of the pit, where it was packed away in sections formed by a movable partition and trampled down tightly, salt at the rate of about 2 pounds to the ton of fodder being added. This pit is seen in fig. 5, which represents it in longitudinal section, and in fig. 6, which shows it in plan, and in which one division is seen filled, and the other in course of filling. When the pits are filled, the fodder is covered with a layer of fine clay 9 inches thick, well beaten down. In these figures the parts are shown by the following letters: *B* is the fodder cutter; *C* the rail track; *D* the exterior walls; *E* the division wall; *F* the filled compartment; *G* that in course of filling; *H* the movable partition with a transverse bar, *P*, which holds it in position; *I* the truck. The pit is shown in fig. 4, as covered with a roof of boards as protection from the weather, a measure of economy strongly recommended by M. Piret. In this figure the covering of clay is shown on the top of the fodder. This is beaten down frequently, as it may become cracked or disturbed by the settlement of the mass beneath.

The cost of the process here described is represented as being about $3 per ton, including the cutting, carrying, curing, and feeding of a crop equal to nearly 50 tons per acre of green fodder, (50,000 kilos per hectare). This enormous yield appears almost incredible to us, being a ton to less than 4 square rods, still we cannot doubt but such a yield is not only frequent, but that it is sometimes surpassed. It goes to show that in the cultivation and use of this our most common crop, we come far short of the possible yield, notwithstanding our favorable climate and the necessity of every available economy to cheapen or increase its production.

Log Drains.

"A Subscriber" in Texas asks for a method of making drains with logs, where there are neither tiles nor stone to be procured. In such a case we suggest a plan which is illustrated by the accompanying engravings. The ditches are dug in the usual manner, and the logs are placed in the bottom in such a way, as to leave a water-channel between them. In fig. 2 the bottom log is split, and each half is laid closely against the side of the ditch, so that the current can not wear it down, and cause the earth to fall in. The side logs are kept in place by the pressure of the top log. Brush

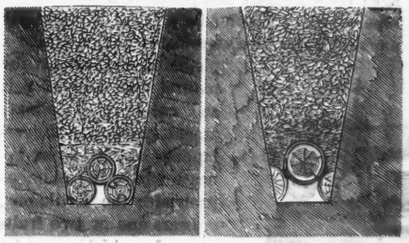


Fig. 1.—DRAIN OF WHOLE. Fig. 2.—OF SPLIT LOGS.

is laid upon the logs and trodden down, and earth is thrown upon it, until the ditch is full. Such drains may be expected to last several years, after which it will pay to make more permanent ones.

WHAT IS THE MOST PROFITABLE?—Inquiries are frequently made as to which is the most profitable branch of farming. It depends on several contingencies. In some places corn-growing and pork-raising, in others wool-growing, and in others dairying are steadily profitable one year with another. Where circumstances, such as rich corn land, healthful dry pastures, or abundant grass, with pure water, favor one or the other of these specialties, it is best to fall into them and keep to them. But for general purposes special crops or employments are rarely suitable, and mixed farming is the best reliance. This implies the culture of roots, grass, and grain, chiefly for feeding to the stock, and only partly for sale. The aim must be to distribute the produce so that a good portion comes back to the soil as manure, and the soil is kept improving constantly in fertility and freedom from weeds. Then immediate advantage can be taken of any exceptional condition of things, and if grain does not pay, meat and wool may be made, and if grain happens to be high, it may be sold, and some other cheaper feed be bought to replace it. A sharp farmer who has some capital, and can turn about at a short notice, will never be caught in a poor year, without at least an average profit from his business.

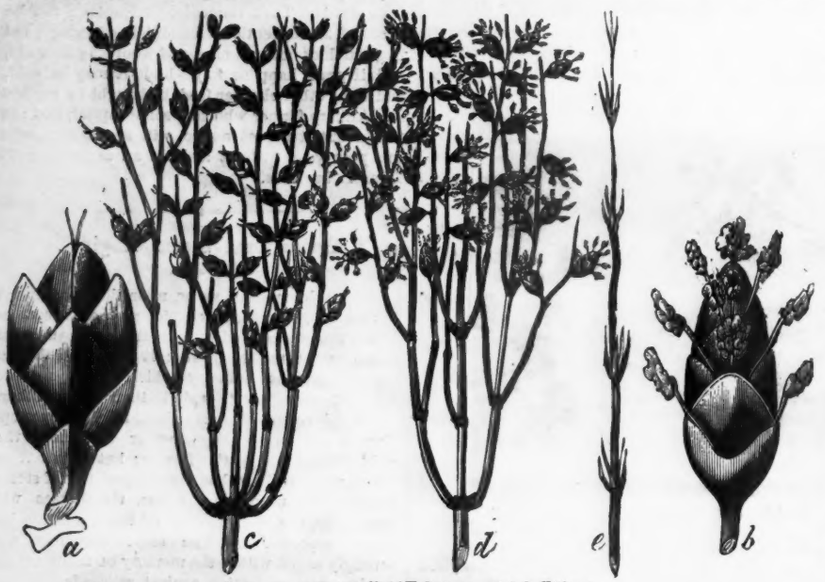
Agricultural Steam Engines.

The employment of steam upon the farm, is yet in its infancy. In the mechanic arts there is scarcely any thing produced without the employment of steam as the motive power; it is strange that in agriculture, the industry which employs more laborers and more capital than any other, the employment of steam should be very exceptional and rare. Horse-power is almost the only dependence of the farmer; but it is not so cheap as steam. It has been urged that if steam engines are used upon farms, the horses will stand idle, and the breeding of these animals become unprofitable. The same argument was strongly urged within the memory of many of our readers, as an objection against railroads. It was said that horses would become useless for want of work. Experience has shown that the wonderful expansion of the railroad system has so stimulated every industry, that horses are in greater demand than ever before, and in some countries their exportation is forbidden by law. The same effect must necessarily follow the cheapening of labor on the farm, by the use of steam. If the threshing, cutting and preparing of feed, and other stationary work of the farm is done by steam-power, there will be more time in which to plow and harrow, and more land can be brought under cultivation, and this will set in motion more work again for horses, as well as steam engines in other ways.

Steam-power is cheaper in its first cost than horse-power. The power of a dozen horses can be purchased for $1,200, and it practically lasts indefinitely; never tires, never stops for sickness, and never dies; besides this, and it is a most important consideration, it only consumes while it is working. The food and drink of a 4-horse-power steam-engine, which will do the work of more than 4 horses, consists of 200 pounds of coal, and 200 gallons of water daily. The cost of such an engine and boiler complete, is about $700, at least that is the price at which the portable engine, such as we here illustrate, can be procured. A 10-horse-power engine of the same kind, costs $1,200. This is much less than the actual value of a corresponding force of horses. The engraving represents a new and greatly improved portable engine, by Messrs. Wood, Taber & Morse, of Eaton, Madison Co., N. Y., made expressly for farm work. These engines are of two sizes, and called the "Rubicon," and the "Hercules." These names have been chosen to avoid the uncertainty which arises from the common denominations of "horse-powers by different makers"; each of these two kinds of engines being all of exact stated sizes and dimensions. The Rubicon is intended to drive a separator to the utmost capacity of one gang of men in handling the grain and straw; the Hercules will do double that work. This is under moderate steam pressure, and is not the limit of their capacity by any means. The cost of the first is $950, and that of the latter $1,100. These engines are complete with strong but light trucks, smoke pipe, spark arrester, automatic lubricator, and every modern improvement that can be advantageously combined with them. For threshing, cutting and steaming feed, cutting wood, and doing the general mechanical work of the farm, hoisting, loading, or unloading, there can be no cheaper nor more effective power than this.

New Tanning Plants.

Every now and then the papers have an account of some new and wonderful natural product; these phenomenal things were formerly all accredited to California, but of late Colorado and other of the newer states and territories come in for their share. When we see a newspaper article showing forth the wonders of a new forage plant, or one that is useful in dyeing, or in some other way, we take pains to trace the matter up, generally with the result of finding that the marvellous story is told of some old and well known plant, and that we have another instance of the general inaccuracy of newspaper science. Within a few months there has been much said about tanning plants; one of these, the Nebraska tanning plant, turned out to be *Polygonum amphibium*, a well known species of smartweed, and instead of being confined to a few localities in Nebraska, is very common from New England westward, as well as in Europe; so we fear that the company formed for gathering and baling the plant in Nebraska, will hardly have a monopoly of the article. Then Nevada presented its claims to having a valuable tanning plant, and this, upon being followed up, proved to be much more interesting than the other; we found it to be a plant quite unknown to the majority of our readers, and one of the most curious of our native plants. When the specimens, kindly furnished by S. T. Heath, Washoe Co., Nevada, came to hand, we were glad to see an old acquaintance made in botanizing across the country from Texas to the Pacific—*Ephedra antisiphyllitica*. Aside from any economical value they may have, the Ephedras are exceedingly interesting plants, being in structure and habit quite unlike any other natives; they belong to a small family, the *Gnetaceæ*, which is near to the pine-family; it is not necessary for us to minutely describe their structure, as their external appearance and habit is such as to allow them to be recognized at sight. There are some 15 species in different countries, the two or three found here being low shrubs, two or three feet high, with clustered branches, which are jointed, and have sheaths at the joints, giving the plants much the appearance of a branching horse-tail or scouring-rush, (*Equisetum*), the sheaths sometimes on flowerless stems, developed as at *e* in the engraving, are all the leaves the plant has, the green stems serving as foliage; the staminate and pistillate flowers are on separate plants, both kinds being in cone-like aments; *b* shows a staminate branch, and *c* a pistillate one about the natural size, and at *d* is an enlarged staminate ament, consisting of overlapping scales, from beneath which the stamens protrude; the fertile one, *a*, bears one or two fruits or seeds, which present a structure of much interest to the botanist. The plants are resinous and astringent to the taste, and the one in question is used in localities where it grows as a medicine, and as a substitute for tea. The plant grows in large clumps, and the dense mass of peculiar yellowish-green leafless stems, if not beautiful, would at least produce a novel effect in gardening, and wherever it would be hardy, it is worth growing for its oddity. The European species have the common name of Shrubby Horse-tail; the Mexicans call ours *Tepopote*, but the botanical name—*Ephedra*, is quite as handy as either. Animals are fond of browsing upon the plant, but probably more for a change than for any considerable nourishment it may afford. Its value as a tanning material needs to be carefully examined; that it will tan skins very completely there is no doubt; Mr. Heath sends us a piece of buckskin tanned with the plant, which is of a light pleasing color. Should it be found of sufficient value, as compared with other tanning materials, an extract could be prepared, as the stems of the plants are too bulky for distant transportation.

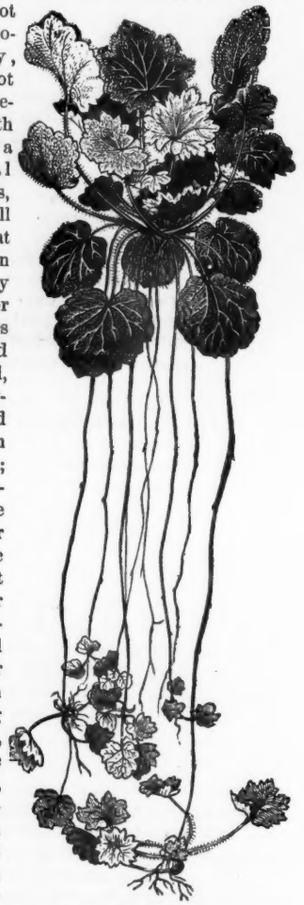


"TANNING PLANT."—(*Ephedra antisiphyllitica.*)
a, fertile ament; *b*, staminate branch; *c*, pistillate branch; *d*, staminate ament; *e*, flowerless stem.

WOOD, TABER & MORSE'S ENGINE.—(*See page 223.*)

The Chinese or Beefsteak Saxifrage.

The Chinese Saxifrage is an illustration of the manner in which the popularity of a plant is affected by fashion; this was introduced from China over 100 years ago, and has been found here and there among old-fashioned house-plants, but regarded as too common to form a part of the florist's stock. A few years ago hanging baskets came into use for the cultivation of flowers, their popularity yearly increasing, and this neglected Saxifrage being found to be a most useful basket-plant, it is now raised in quantities by the florists, and is to be had almost everywhere among the dealers. The plant is so different in general appearance from other Saxifrages, that one who did not study it botanically, would not think it belonged with them. It is a perennial with leaves, which are all clustered at the root on long hairy stalks, two or three inches broad, round heart-shaped, or kidney-shaped, and scolloped on the margin; they are thickish, purple on the under side, with the somewhat hairy upper surface marked with broad irregular whitish stripes along the veins, from the base to the edge, which, contrasting with the light green, give it a handsomely variegated appearance.



CHINESE SAXIFRAGE—PLANT WITH RUNNERS.

Well established plants flower freely, throwing up a flower stalk a foot or more high, with the flowers arranged in a loose pyramidal cluster; the flowers themselves are small and not very showy, but when closely examined, are found to be exceedingly neat and

pretty; the flower is made very irregular by having two of its petals thrice the length of the others, and hanging directly downwards, while the other three are erect; the long petals are white, and the short ones a delicate pink, with some darker spots of the same, and an orange-colored spot at the base of each. The engraving shows very correctly the shape of the flowers, and their arrangement in the cluster. The plant propagates itself in the same manner as the strawberry, by throwing off long, weak stems, which form a bud at the end, which develops into a new plant. These runners are in botanical language *sarments*, hence this species is named *Saxifraga sarmentosa*; the runners are very much more slender than in the strawberry, being exceedingly fine and thread-like. The buds formed on the runners, when they come in contract with the soil, at once take root, but when the plant is grown in a suspended basket or vase, being unable to reach any soil, they grow to a considerable size, being fed by the old plant, and at length put out runners of their own, and frequently this will be repeated several times, presenting a very interesting appearance. This manner of growth is illustrated in the engraving given on the preceding page; about half size. The plant is not only suited for hanging baskets by its pendulous habit, but by its hardiness, is useful for both in-door and out-door baskets; many plants otherwise well adapted for baskets, are very delicate, and do not flourish under the neglect to which out-door baskets are often subjected, and it stands occasional drying out, as well as sudden cold or even frosts. It is hardy in England, and would probably be so here south of New York. A few years ago we left it out upon a rock-work, and the winter happening to be an unusually mild one, it survived. Like many other plants that have been a long time in cultivation as house-plants, this has received a number of common names; that of "Beefsteak Saxifrage," or "Beefsteak Geranium," would appear to have been given on account of the color of the under side of the leaves; "Strawberry Geranium," has reference to its running like the strawberry; "Wandering Jew," and "Sailor-plant," indicate its traveling propensities, and "Mother of Thousands," its prolific character; besides these there are other popular names not just now recalled. A very handsomely marked plant, sold as *S. tricolor*, may be a variety of this; it has a similar habit, and its leaves finely marked with white, green, and red, but the markings are not permanent.

CHINESE OR BEEFSTEAK SAXIFRAGE.—(*Saxifraga sarmentosa.*)

THICK-LEAVED PLANTS.—(*Crassula cordata.*)

Succulents—Thick-Leaved Plants.

Horticulturists include in the class of succulents, plants belonging to very different families; the French in *plantes grasses*—fat or fleshy plants—do the same; any classification founded upon one character only, brings together very unlike plants, and we find the succulents are as miscellaneous a lot, as would be a group of red-berried plants. So we find in the catalogues Cactuses, Agaves, Yuccas, Euphorbias, Sedums, and others, which are more unlike botanically, than are roses and cabbages, classed as succulents. Our intention is to say a word, not about all the succulents, but only about some plants of the proper thick-leaved family, the *Crassulaceæ*, better known perhaps as the Stonecrop Family. The botanical name of the family is from that of one of its genera *Crassula*, which is named from the Latin word *crassus*, thick, and it is not stretching the use of words, to call it the "Thick-leaved Family." Those who have not given especial thought to the matter, can not be aware of what a wonderful organ the leaf is, and how beautifully it is arranged to meet the requirements of the plant in different climates and situations. The leaves of plants generally are covered with a thin, impervious skin, or epidermis, in which there are innumerable little mouths (*stomata*) or breathing holes, so arranged that they open or close, according to the state of the atmosphere; if the air is very dry, they close up tight, and thus prevent undue evaporation. The plants of hot and dry countries have their leaves especially arranged to prevent evaporation for the greater part of the time; they are thick and succulent, and hold during the dry season the moisture they have taken up during the brief season of rains; a microscopic examination of the leaves of the Aloes and Euphorbias of the sunburnt plains of Africa, or the Cactuses of the arid table lands of the interior of our own continent, shows how admirably they are fortified to stand a siege of drouth. When we examine the leaves of the thick-leaved plants, which are not rare in the temperate regions, and find that they have a similar provision against evaporation, and are in some cases quite as well provided against the drouth, as those in the rainless regions, we may think that there is a mistake. But we also

find that the plants of temperate regions, with their leaves so admirably arranged to resist drouth, in their wild state grow upon barren rocks, on old walls, and on sandy plains, where plants with ordinary foliage would soon perish. The point to which we would direct these remarks is this: that plants so well provided to exist, and even flourish under natural conditions unfavorable to growth, will do so equally well in the hot and dry artificial climate that we make in our houses. There would be much more cultivation of plants in rooms, if people in houses heated by furnaces and stoves, would not persist in their attempts to grow roses, carnations, and camellias, which, nine cases in ten, end in disappointment. The thick-leaved plants afford variety and beauty of foliage, and many of them are pleasing, and others really brilliant when in bloom. We do not say that we should prefer these to roses and carnations, but that success with these is preferable to failure with the others. The merits of some genera of this family have been set forth in our columns by Mr. Chas. H. Hovey, of Cambridgeport, Mass., whose article in August last on Sempervivums, and that in June last on Echeverias, gives an account of the most desirable species in these genera. We may mention that the large *Echeveria retusa floribunda*, then figured, has proved an admirable winter-flowering species, and a most brilliant house-plant. Among the Sedums, or Stone-crops, are white, pink, and yellow-flowered species, with great diversity of habit, excellent hardy border-plants, and some specially useful for basket-culture; nearly all are summer-flowering, but the Japanese *S. Sieboldii* is a fine house-plant, whether the plain-leaved, or its variegated form. Turning to the genus *Crassula*, which gives its name to the family, we find the species, being mostly African, are not hardy, but they furnish a number of capital house-plants, all with great powers of resisting the effects of dry air. *Crassula coccinea* is a very old house-plant, but it would be difficult to find a more brilliant cluster of scarlet flowers than it bears; this is sometimes called *Rochea; Crassula lactea*, in the catalogues incorrectly as C. perfoliata, produces pyramidal clusters of small pure white flowers, and is grown by some florists to supply cut flowers. *Crassula cordata* is a remarkably free flowering species, which has less compact clusters than the one last named, and its flowers are slightly purplish, and very neat; the engraving (p. 225) shows the flowers and foliage of the natural size; it has kept in flower with us all winter. This plant seems bent on propagating itself; wherever a stem touches the ground it takes root, and if kept in a moist atmosphere, rootlets are thrown out from the stem into the air; more than this, there is often produced in the place of a flower a minute bud, which, if allowed to remain, develops several little leaves, and finally drops, and if it falls upon the earth, takes root. All of the tender plants of this family may be used as border plants in summer, where their often striking form and color of foliage will be attractive; some, such as the Echeverias, are used in forming ornamental designs, but this requires a greater number of plants than most persons can afford. Our principal object is to call the attention of those who are unable to grow other house-plants, to the variety offered by these of the Crassula family; a collection of Echeverias, Sempervivums, Crassulas, and Rocheas, is beautiful for the foliage alone, and besides this, many have exceedingly showy flowers, and present a strong claim to popular favor.

Tender Climbing Roses.

Nothing in the horticulture of the southern states is more likely to strike the traveler from the north than the profusion of climbing roses. Lamarque and other climbers, which he has seen in his colder climate attaining perfection only under glass, there festoon the houses in both city and country, and for the greater part of the year produce a wealth of the choicest flowers. With proper management these tender climbers may be made to give much better satisfaction in northern localities than they usually do, and all rose-growers will be thankful for the following bit of experience from B. Shaw, Esq., Williamsport, Pa., who says:

"I have planted around a bay-window, under which there are three cellar windows, 'Lamarque,' 'Marechal Niel,' and 'Gloire de Dijon.' The plants are too large to bury, some of them being 18 feet high, and I protect them in the following manner: When it is time to bury other tender roses, I take out the cellar windows and bend down the roses (which are planted directly in front of them), and draw them into the cellar; I then take strips of cloth or leather and tack the rose-stems to the under side of the floor timbers; this puts them entirely out of the way, and at the same time protects them from being broken. To protect the root, and at the same time to close up the window, I make a box as large, or larger, than the cellar window, using the sash out of the cellar window for one end of the box; this will give light in the cellar almost as well as though it had not been moved; the other end and one side of the box are left open; the open end comes next to the house, with the open side on the ground; this will entirely close up the window, but not exclude the light. I then bank up on either side of the box with manure, to keep the earth from freezing. In this way any of the tenderest climbing roses may be grown as well as in a warm climate, and if any one doubts whether it pays or not, to take this little extra trouble, let him come and see a "Lamarque" or a "Gloire de Dijon," from twelve to eighteen feet high, in full bloom, and I think he will be satisfied that it more than pays." [This is well worth trying.—ED.]

Attar of Roses.

The following account of the sources and preparation of the perfume, known as Attar of Roses, we gather from a most reliable recent work on plant products, the Pharmacographia of Flückiger and Hanbury. It was unknown to the Greeks and Romans. The Rose-oil of Dioscorides was a fatty oil, perhaps oil of olives, in which roses had been steeped. The first knowledge we have of the distillation of roses came from Persia, by way of Constantinople, towards the close of the 13th century. But the earliest mention we have of the *attar* is by Kæmpfer, very much later. Kæmpfer speaks with admiration of the rose gardens he saw at Shiraz, in 1683-4, and says that the water distilled from them is exported to other parts of Persia, as well as to all India; and he adds, as a singular fact, that there separates from it a certain fat, like butter, called *Ættr gyl*, of the most exquisite odor, and more valuable even than gold. It was not until the 17th century that the oil of roses was known, and sold very sparingly by the apothecaries of Italy and Germany. It was scarcely known in English commerce until the commencement of this century.

The chief locality for attar of rose, at least for that which comes to Europe and America, is a small tract in Asiatic Turkey, on the southern side of the Balkan Mountains, in the province of Rumelia. The Damask Rose (*Rosa Damascena*) is the species used, mainly, if not exclusively. The flowers are gathered before sunrise, and are always distilled on the same day. Those that are not taken directly to the still, are spread out in cellars. The still is of copper, of the simplest description, to which a straight tin tube is added, cooled by traversing a tub fed by a stream of water. The roses are thrown in whole, 25 to 50 pounds to a charge, with an adequate supply of water. The runnings are received in glass flasks, which are kept for a day or two at a temperature not lower than 60° Fahrenheit, by which time most of the oil, bright and fluid, will have risen to the surface. From this it is skimmed off by means of a small tin funnel, with a long handle and a fine orifice. The yield of the attar from the rose-water does not exceed 0.04 per cent. A large part of the rose-water used in England, is made in the south east of France, at Cannes and Nice; where also a little rose-oil is produced, of a fine quality, commanding a high price.

CORN (MAIZE) FROM EGYPT.—"Some 23 years ago, Dr. Abbot, of Egyptian antiquity fame, presented my father, the late Dr. John W. Francis, with some grains of corn which he had himself taken out of a mummy. They were planted in our garden in Bond St., and well do I remember the deep interest expressed by the many visitors who watched with anxiety the growth of grain that had been concealed for 3,000 years. In due course of time an ear appeared and ripened on the stalk. It resembled in many respects the Virginia corn of the present day. This being the case, and it having been [*thus!*] proved that corn existed in Egypt before the discovery of America," etc.....The above is copied out of a very queer pamphlet, just published, entitled "Curious Facts concerning Man and Nature," by a New York Physician. When the author has been in Egypt, and seen how ingenious and active the people are in putting up "mummy grain" and other articles, for which both maize and *dourra* are conveniently at hand, he may be less confident about the existence of maize in Ancient Egypt, and the germination of any sort of grain 3,000 years old. A. G.

Paris-Green in the Field, the Orchard, and in the Garden.

That persons have been injured while using Paris-green, we have no doubt. That any injury has resulted from the eating of potatoes, fruits, or other products of plants to which this poison has been applied, we do not believe. We do not say that it is impossible that this can happen, but we do say that tons and tons of Paris-green have been used in various parts of the country, to kill the potato-bug and other insects, and there has come to our knowledge no instance of injury resulting from eating the products of the plants thus treated, nor any analysis, showing the presence of arsenic in these plants or their products. Did we know or suspect that the slightest injury might occur in this manner, we should at once discountenance the use of the poison. It is necessary that the very deadly character of this poison should be known in order to insure care in its use. No person with scratched or cut hands should apply it, and whoever uses it should avoid handling it, avoid breathing the dust, and everywhere and all the time keep in mind the absolutely dangerous character of the article. It should be stored out of reach as carefully as gunpowder, and its application should not be entrusted to a careless or an ignorant person. There are two methods of applying it: in the dry state, diluted with some dry powder, and in the liquid state, suspended in water. There are various qualities of Paris-green in the market; the best makers, to their shame be it said, make several brands; in other words, adulterate it at the factory. There is no ready test which one can apply to ascertain the purity of the article, and the only way is to buy of

responsible parties who will properly represent its quality. For use in the dry state, flour is found to be the best to mix with the poison, as it adheres to the leaves better than plaster, which is sometimes used. With the pure poison one part to twenty of flour is sufficient. Some kind of a sifting arrangement must be provided, with a long handle. An apparatus which can be readily made by any tin worker was shown in the *Agriculturist* last month, p. 187; of course some other contrivance that will answer the purpose may be substituted; even a wide-mouthed bottle, with muslin tied over the mouth has been successfully used. Always keep to the windward, and by every possible precaution avoid breathing the dust. It takes but a little, properly applied, and even distribution is of more consequence than a large quantity. In applying Paris-green in the wet way, remember that it is not soluble in water, but is only diffused through and suspended in it, hence it must not be allowed to settle to the bottom of the vessel. Frequent and thorough stirring must be attended to. A tablespoonful of the poison to an ordinary pailful of water is the quantity used. It may be applied by means of a watering-pot, or by the use of some of the various garden force-pumps sold by seedsmen and at the implement stores. In using be careful not to wet the skin with the liquid, and if it gets upon the hands or elsewhere, have water near by to wash it off at once. When a force-pump is used, the liquid can be kept stirred by now and then directing the stream into the pail containing it. The chief use of Paris-green is to kill the Colorado potato-beetle and the cotton-worm; it has been successfully applied in the liquid way, to kill canker-worms on apple and other trees, and has been used also on squash and other vines in the garden. Of course it will not be proper to apply it to cabbages or other plants of which the foliage, or other parts which can retain the poison on the surface, is eaten. We repeat that Paris-green is a most dangerous poison and must be used with a full knowledge of this fact. Store it where by no accident others can have access to it. Use it in such a manner that no harm can come to the operator. See that the pails and other vessels are used for nothing else. Finally, do not use it at all if any other means for destroying insects will accomplish the end.

SETTING STAKES.—The usual method of setting bean-poles, grape-stakes, and other garden supports, is slow, but where there are only a few of them, it will not pay to have a special appliance for the purpose. In France, where the grape vines are largely supported by stakes, they use a sort of clamp or "clevis," as they call it, which greatly facilitates the operation of setting them. The implement itself is made of iron, of the shape shown in fig. 1, and provided with straps to fasten it. As there the laborers wear wooden shoes or *sabots*, the clevis is made large enough to work with those. The manner of using it is seen in fig. 2; the stake or pole being caught between the sole piece and the arm, can be held with great firmness, if the operator properly manages the upper end of it, and the force of the leg, aided by the weight of the body, pushes the point into the soil; a slight turn of the foot will loosen the grip, and allow another hold to be taken, if need be, to set the stake still deeper.

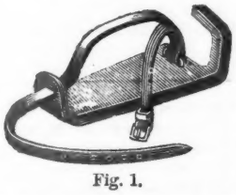


Fig. 1.

Fig. 2.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Home Topics.

BY FAITH ROCHESTER.

Learning to Read Early.—The Other Side.

Every question has two sides, though to be sure, one may be the wrong side. There are two sides to this subject of early reading lessons, and doubtless there is truth on both sides. I am now prepared to listen more favorably than once I would, to the following testimony from a mother.—"I am quite in favor, so far as my own experience goes, of having healthy children learn to read early. G. will not be seven years old until May, but it is much pleasanter of an evening to have him interested in a book than to have him playing about. He enjoys study, and I think will make a good scholar."

From this standpoint—the mother's present ease—I am perfectly certain that my friend is right. Oh! *don't* I know it! My faith in the new education—in the theory of the kindergarten, and in the cultivation of a child's faculties in the natural order of their spontaneous development—continues to strengthen; but I sometimes feel, in actual experience, as though I have been trying to put new wine into old bottles, and I seem to see the bottles bursting and the rich wine wasting in consequence. All this in moments of discouragement, and then I think how much easier it would be for me if I had checked the children's questions more, had discouraged their appeals to me for sympathy—in fact had "turned them off," systematically, from the first, to keep their thoughts and queries to themselves. They "tire me to death," sometimes, and probably my indulgence of their questions and communications has helped to make them children of the "never-weaning" kind. No philosopher need suppose that a minister's work and a teacher's work and a writer's work exhausts the nervous force so that considerable rest or absolute relaxation from such work is necessary to health, while a mother can bear with impunity almost *constant* drafts upon her nervous power, in the way of planning, (as well as executing), all manner of cleansing clothing, finding question-answering and amusement-finding labors among her children—all these even if she had no other duties. But most mothers have many other labors in addition to these.

So you see, if a mother has several children and a variety of cares, and no chance to get away alone and rest a little while each day, it must seem very comfortable to have the little ones quietly reading instead of playing about. First catch your "healthy children" though. Be sure that they have no tendency to precocity, no nervousness either natural or resulting from disease, and then they may read as early and long as they choose, for they will not be likely to choose too much.

The Children's Feet.

I refer to the barefooted children, among whom you may count my own, on any warm summer day when they are living in the country. Can anybody tell me what there is in a little boy's constitution which makes it safer for him to go with cold, wet feet than for a little girl to do the same? I meet with people who seem to suppose that it is quite silly to have a boy wear shoes and stockings on days when they are themselves wearing woolen stockings for comfort, and when they would not allow their little girls to go barefooted. So long as the boys' (or girls') feet and hands have a healthy degree of warmth, I feel no concern about them, whatever the thermometer may say; but when I find the feet and hands cold, no matter what may be the month of the year, I know that something is going wrong, or will soon go wrong with the general health unless greater warmth is secured. It *is* a bother to have children wear their shoes and stockings a few hours in the morning and then take them off as the heat of the day comes on, but I am not going to let children eat their breakfasts in a blue and chilled condition.

They tell me that folks never used to take such pains with their children, and that those children were healthier than these. Very likely. I noticed what "Walks and Talks" said about his pigs. Did he not say that the better breeds cannot endure such neglect as common pigs do not seem to mind? Is not this the fact with all improved stock? Do not such animals require more careful nurture while young, and better reward good care in maturity? Is not this true also of seed in all its higher or more improved varieties? There is a similar difference between man in his savage, and man in his civilized condition. Herbert Spencer says that, "when, the constitution being sound enough, exposure does produce hardness, it does so at the expense of growth." I fancy that one reason why our children have not such sound constitutions as we could wish, is because of hardships and exposures during childhood of the generations preceding them.

All this may seem an out of place "topic" for June, but there are cool, rainy days, and many cool mornings and evenings in this month, when delicate children go about in a chilly condition.

Something About Rag Carpets.

Not much, however, for the very good reason that I know but little about rag carpets. I have one "on the works," and am doubtful whether to go on with it or to sell it to the rag-man. Of course, it pays some folks to make rag carpets, but it certainly will not pay every woman. I have been accustomed to speak of myself as having "made" one rag carpet—a very good one, too, and one that has done steady service for ten years, and is not yet entirely cast aside. I fancy now that my mother has sometimes smiled in her sleeve when I have spoken of that carpet as one that "I made." She it was who cut nearly every rag, and sewed the same proportion of them, who did all of the coloring and calculating, while I only brought out things that would do to cut up, (about half of which I should not now think of cutting into carpet rags until they had done more service as garments), planned the stripe, and paid the weaver. That was done when I was getting ready to go to housekeeping. Two years ago the same dear hands cut up another lot of rags for me, and I have thought myself almost in possession of another new rag carpet. But those rags are made largely of children's old clothes, and are shorter and poorer than those that went into the first carpet. I had them littering around a few days last week, and put them away as a bad job, it is so much slower business than I expected. I shall have to hire them sewed, at not less than twelve and a half cents a pound. So it will cost over three dollars to get twenty-five pounds sewed. Then there will be the cost of the work and the weaving. Are rag carpets cheap?

I had heard that a pound of rags yields a yard of carpeting. I think this is a very common estimate, but my neighbor, who has a beautiful rag carpet on her sitting-room, (beautiful at least by comparison with other rag carpets), tells me that a pound of rags to a yard makes a poor sleazy carpet in her opinion. She used a pound and a half to a yard. The filling, (or rags), in her carpet might be woven all in one long thread for aught one could tell by the piecing, so smoothly are the rags sewed and woven. She shewed me how she sewed all of her rags, which are mostly cotton, nine old sheets having been used up in thirty yards. She lapped one over the other about three-fourths of an inch, then doubled the lapped place and sewed three stitches before fastening her thread—the first a back-stitch to hold down the lapping end, then two stitches running, and then the fastening of the thread. Now she found the doubled and lapped place too thick, so every time she joined two strips, she picked up her scissors and cut away a scallop from the thicker portion, so as to leave the joined place no thicker than the rags on each side of it. I was interested to see just how a person who was brought up to do everything in the best manner possible, thought that carpet rags should be sewed, but I surely do not expect any one to sew my short carpet rags in that way for twelve and a half cents a pound! Nor would I probably take that pains myself.

"She was five years making that carpet," said the lady's husband.

"Men never like rag carpets till they are done,"

I said, but my friend protested that her husband never had any cause for complaint about her carpet on account of the litter, and if the work took her five years, it was chiefly because she did so little at a time.

Some women are even ten years making a rag carpet, but they seem to do it very easily after all, and perhaps their's is the best way for women who have settled homes and the power to take things by the easiest handle. Whenever a garment is condemned as past wearing, and fit only for a carpet, it is at once cleansed, cut up nicely, and put away with the carpet rags of the same color. If the carpet is to be striped, the rags are sewed and wound before putting away. Then, when enough rags have accumulated, how easy it is to get them out and pack them off to the weaver, stopping, perhaps, to color and strip up some old sheets. This saves much which would otherwise be lost to the carpet.

Many suppose that a striped carpet is, of course, prettier than one that is made "hit-and-miss." I saw one of the latter kind upon a floor in Connecticut, several years ago, which pleased me so much that I thought I would never make another striped carpet. I told my friend I had no idea that a hit-and-miss carpet could look so lively. She said it looked bright because there were bright rags in it. Then I observed that, though the prevailing tint of the carpet was brown or grey, there were all colors in it, and I found that there was a considerable quantity of bright rags, clear scarlet, blue, green,

Fig. 1.—RAG-TYING MACHINE.

yellow, and orange. These bright rags were in short lengths and evenly distributed. Their part in the carpet was to give it a cheerful, sunshiny look. There was an evenness of tone about the whole, which can only be obtained by sewing the different colors according to some definite system, not spotting them in at random.

A Rag-tying Machine.

I had hoped for considerable assistance from a home-made, rag-tying machine, but it did not meet

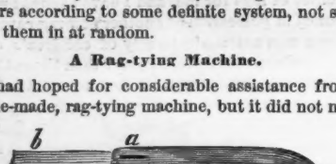


Fig. 2.—USING THE MACHINE.

my expectations. I think, however, that strong cotton rags might be joined in that way more rapidly than by a thread and needle. My own rags are so promiscuous in character that we could not make it work satisfactorily. Woolen rags cut bias or thick cloth ones cut very narrow, could not be tied so as to hold. It seems to me that the knot does not lie so smooth as the place joined by sewing, yet I have seen carpet-rags sewed so that the work was even more bungling than this knot.

The machine is easily and quickly made, and I describe it, as it may prove a help to somebody. My boy was quite charmed with the work of tying if he could pick the best rags to use on the machine, which would hardly do.

A sharp knife-blade, (*a*), and a blunt spindle, (*b*), are the necessary parts of the machine, and these are inserted in a short board, (*c*), about a foot long, one on each side of the board. We used a jack-knife blade, and the spindle was made of red cedar. The knife blade was driven up through the board, and the spindle was made fast in a gimlet hole.

To use the machine, (see fig. 2), take a rag in each hand, lap the one, (*a*), in the right hand, an inch over the one in the left hand, (*b*), press them down upon the knife-point, cutting a button-hole slit as seen at *a*, turn the other end, (*c*), of the rag that was in the right hand under the slit that is through both rags, and press it upon the spindle, punching the end through the hole; draw the noose snug, and the result is a knot.

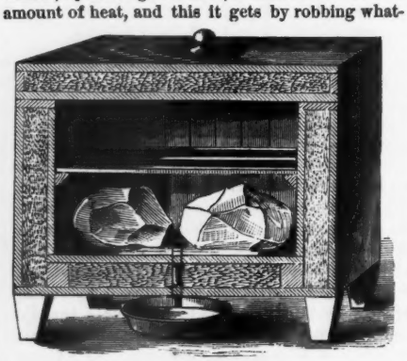
Vines at the Windows.

It is a common mistake to train the morning glories and other climbers in such a way as to darken the windows too much. On bright days, when the doors stand open, and when shade is necessary to comfort, it seems all right to have a thick screen of vines at the window. But there are some dark, damp days—whole weeks of them in the fall, while the vines are still too beautiful to pull down, when the rooms so shaded are made gloomy and unwholesome by the mass of vines at the window. It is not yet too late to fasten the supports in such a way as to frame the window, rather than to hide it. If a screen is desirable it is best to sow the vine seeds at a little distance, and use stout poles with the strings for the vines to run upon, keeping the whole away from the wall of the house.

But it is too bad to make any permanent defence against the bright sunshine, which is far more friendly than mischievous in its visits to our rooms. When it grows too ardent, a thick curtain may be dropped at a window where there are no blinds.

Ice-Boxes and Refrigerators.

It seems hardly possible, now that ice is looked upon as a necessity, that less than 50 years ago it was a rare luxury to be enjoyed only by the wealthy. It is not our present purpose to say anything about the procuring of ice, but to give some hints about the use of it, whether it be drawn from one's own ice-house or bought of the ice dealers. In either case a receptacle of some kind is required for utilizing it. To those who can afford it, one of the modern style of refrigerators will be the handiest. In these there is a receptacle for the ice, and separate compartments to receive the articles to be kept cool. In buying a refrigerator—at least a large one—see that there are two or more distinct cool-chambers, in one of which milk, butter and other things which readily absorb odors, can be kept separate from meats and other articles which give off odors. In all refrigerators constructed upon scientific principles, the place for the ice should be at the *top*, as the cool air is heavier than warm, a proper circulation will be induced. Lesley's Zero Refrigerator, which we satisfactorily used for several years, is constructed on this principle. Those who do not wish to go to the expense of a refrigerator, or need to store ice in larger quantities than an ordinary refrigerator will admit, can make an ice-box which will answer the purpose, and will serve all the uses of a refrigerator, though less economical in the expenditure of ice. Of course ice only cools the atmosphere around it, and the articles placed near or in contact with it, by melting. To melt, it must have a certain amount of heat, and this it gets by robbing whatever may be near it. An arrangement, which prevented ice from melting at all, would be a very good ice preserver, but a poor refrigerator. The object is to prevent all melting except so much as is useful, hence all refrigerators and ice-boxes are so constructed that the ice will receive no heat from the outside atmosphere, but all that it gets must be taken from the articles confined with it.



HOME-MADE ICE-BOX.

As to exercise any useful effect, ice must melt; all such contrivances must have a provision for carrying off the drip. The points to be regarded in a home-made ice-box are—a non-conducting exterior, and a drainage-pipe. The box must be made with double walls; *i. e.*, one box within another, and the space between the two filled by some non-conducting material. The inner box should be water-tight, and this is best secured by lining it with zinc. It will be seen that there are no difficulties in the way of constructing a cool box, as it may be made for the purpose, or two dry goods or other boxes may be found, one a few inches smaller than the other, which will answer. The engraving shows such a box in *section*. The kind of non-conducting material is not important, so that it be light and dry; some of the refrigerator makers use felt; light and dry sawdust, charcoal dust, cotton, waste wool, or any similar substance that will enclose plenty of air—for that is the real object of it—will answer. The zinc lining of the inner box must be perfectly tight, as no water shall get to the filling, for it would then be a poor non-conductor, besides it would become musty. Some blocks should be placed under this box to prevent its weight from resting upon the filling, and a pipe is to be arranged to lead from it through the filling and the outer box, to allow the water from the melting of the ice to run off; if this pipe can connect with a drain or some outlet, it will save frequent emptying of the receptacle which otherwise it is necessary to place under it; a bit of sponge in the upper opening of this pipe will prevent the entrance of warm air and not obstruct the flow. The lid of the box may be made double, and filled with the non-conducting material, or, if the box is a nicely made one, an inner lid may shut upon the inner box, and another close fitting lid upon the outer one, the few inches of air between the two, if they fit tightly, serving as a sufficient non-conductor. A movable shelf of slats resting upon cleats above the ice completes the arrangement. The melting of the ice may be materially retarded by covering it with a blanket or other woolen material, and still make the box sufficiently cool. Great care is necessary to not spill milk or other liquids, or otherwise soil the interior, and in any case all refrigerators or ice-boxes should be occasionally thoroughly washed and aired. In this article a number of inquiries by different parties have been answered. Our correspondent E. L., of Wilmington, Del., finds a still cheaper arrangement very useful; he takes two boxes, has lids to both, fills in between with sawdust, makes a hole through both at one end for the escape of water, covers his ice with a blanket, and finds it very satisfactory.

Minced Meat may be regarded as a recent article of commerce.—We mean meat and its adjuncts ready prepared for making mince pies. The trade in the article must have increased very much within a few years, for now we see stacks of covered pails standing at the doors of the wholesale grocers, bearing on showy and highly colored labels, So & So's "warranted," or "original," or "home-made" mince meat. Then quite often a letter comes asking how this "mince" is made—"fearfully and wonderfully" we doubt not, but of the precise "order of its going" we know not. We have a fair share of confidence in human nature, but it has never been so strong as to induce us to order hash or bread-pudding at a hotel or restaurant, nor has it extended to the purchase of promiscuous sausage. But miscellaneous mince meat! That is a little too much. Perhaps our early education prejudiced us; near the school house where we received our early impressions, was a pie-bakery, the owner of which allowed us the run of it. The bullocks' hearts and sheep's and other haslets that came into that bakery, and went out as mince pies, have perhaps given us a bias. It is a case of Sam Weller and the veal-pie—"Werry good wen you knows the woman wot made it." For ourselves, we should as soon think of buying a second-hand tooth-brush, as mince meat put up by a person we did not know. That an article of this kind can be made of as good materials,

and with as much cleanliness on a large scale as on a small one, we do not doubt—but it is all a matter of personal knowledge and confidence, one must "know the woman wot made it."—We have no reason to believe that this "boughten" mince meat is not just as good as any other, we have no proof, only we should go without mince pies for the rest of our lives before we bought any. As to how it is made, we suppose it need not be different from any good home-made mince—as to the proportions of which no two housekeepers agree. We learn that the mince that is sold is highly alcoholic—brandy, it is said, is largely used to make it keep, but it is more likely to be cheap whiskey, when any decent brandy sells for $8 or more a gallon. In short, we don't know—and have no especial desire to know—about this compound.

A Home-Made Chair.

The publication of several articles of home-made furniture, such as tables from boxes, and other easily made conveniences, has induced our friends to wish for more, and we have several letters asking us if we will not give others. The letter of

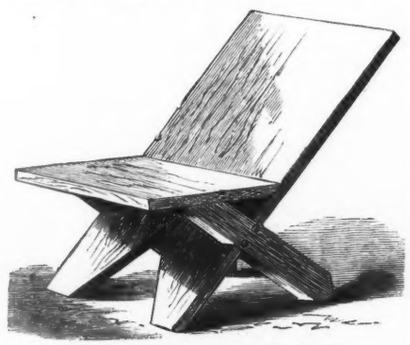


Fig. 1.—HOME-MADE CHAIR—PLAIN.

F. W. Winship, Minn., giving an easily made chair, comes very opportunely. The chair is shown in fig. 1. A board 40 inches long, and 12 or 15 inches wide, as may be preferred, answers for the back and a part of the legs; the seat is made of another piece of board 12 or 15 inches long, and of a width to correspond to the back; the edge of the seat which comes next to the back, must be beveled to give the back the proper pitch; it is then nailed to the back, and further strengthened by nailing a cleat to the back directly under the seat; strips at each side, nailed on as shown in the engraving, strengthen the seat and serve as the rear legs. This chair may have both seat and back upholstered, or with only a cushion for the seat, it will be found very comfor-

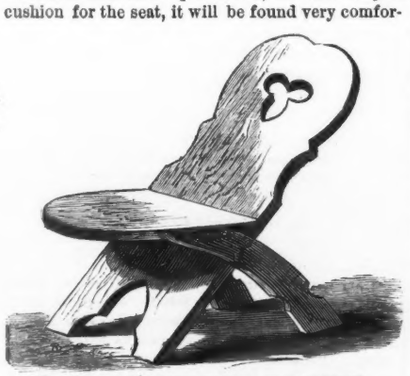


Fig. 2.—HOME-MADE CHAIR—ORNAMENTED.

table. We have no doubt that the idea is original with "F. W. W.," but a number of years ago we made a similar chair for a particular purpose; a young surgical friend needed a chair with a peculiar tilt, in which to perform an operation, and not being able to purchase a regular operating chair, applied to us to suggest a substitute; finding what was wanted, a chair on just this plan was made and covered in an hour or two, which answered every purpose. In fig. 2 is shown how the outlines of the parts may be varied, and produce a really handsome piece of furniture; the pattern can be made more elaborate if one wishes, but there is nothing suggested in this which may not be cut out with a narrow saw. A chair of this style made in hard wood and oiled, would not be out of place in an expensively furnished house. Very comfortable piazza-chairs may be made after these patterns.

Care of the Teeth—Suggestions.

It is admitted that poor teeth are more common among Americans than with any other people. Whether this is due to poor digestion or not, we will not here discuss, though it is quite certain that poor teeth will produce poor digestion, and its consequent ills. It is a fixed physiological fact that food, to be properly digested, must be masticated—ground fine by the teeth and mixed with salvia before it passes into the stomach. Defective teeth, or the lack of teeth, prevent the proper performance of this, the very first act in the complicated process of digestion. The dentist can supply artificial teeth when the natural ones are lacking, but very few persons seem to be aware of what every honest dentist will tell them, that very poor natural teeth are better than the best possible artificial ones. No matter how well they may be made, artificial teeth are always a source of discomfort. Hence the importance of great care to preserve every tooth possible. A natural tooth should be kept useful by filling so long as it can be operated upon. Filling is too important an operation to be trusted to any but the best operators. It sometimes happens, as in the writer's case, that gold and other metals can not be tolerated; the teeth being sensitive, and the gold a good conductor, a sensation of chill and pain was felt when cold or hot liquids came in contact with it. This difficulty was remedied by using a filling of prepared gutta-percha, which has remained firm from three to six years. Some dentists introduce a non-conducting layer of gutta-percha under the gold filling. The proper care of the teeth will do much to preserve them, and it is a great mistake to neglect the teeth, as many do, with the idea that when they are gone, they can afford to buy a new set. We repeat with emphasis what was said above, that the very best artificial teeth are a poor substitute for even poor natural teeth. The teeth of children, after they get their second set, should be carefully looked after, and in old and young, the first signs of decay should be arrested by the care of a skilled dentist. Insist upon proper care of the teeth; few persons are so careless as not to brush them once a day—in the morning usually—but it is quite as important to brush them at night also; and besides this, every particle of food should be carefully removed from between the teeth. Never use a pin, or a metallic tooth-pick, but one of wood or quill, and small enough to go between the closest teeth. Food left between the teeth at night ferments and causes decay. Use only a moderately hard brush and water, as a general thing. The tooth-powders and washes are for the most part worse than useless—some being positively injurious; the teeth should never get into such a condition as to need a harsh scouring with powdered pumice, or powdered charcoal; when this is the case, the cleaning should be done by a dentist, and the teeth kept clean afterwards by the frequent use of the brush. Many persons think that, unless they use a powder of some kind, they are not doing their duty; let such use powdered orris-root, or some fine toilet-soap. If the gums are in a spongy, soft condition, use a few drops of tincture of myrrh in the water, or make a cold infusion of white oak-bark to use as a wash; the strength is not important. To sum up—use the tooth-brush morning and night—all the better if after each meal; use a wood or quill tooth-pick thoroughly, especially before going to bed; avoid all "boughten" and much advertised tooth-powders—and, especially, at the first signs of decay, consult a competent dentist, and hold on to every natural tooth as long so it can perform service.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks—Brazil Nuts—Monkeys and Monkey-Pots.

Among the questions on hand from my young friends, is one about Brazil Nuts, asking where they come from and how they grow. I suppose almost every boy and girl knows these nuts, but for fear that some of you may live too far away from seaports for them to reach you, I have had a drawing made of one, (fig. 1); it is about two inches long, and three-cornered, the two flat sides about an inch wide, and the back, which is somewhat rounded, is narrower; its shell, which is brown, is not difficult to crack, and is filled with the large white kernel, which is very pleasant to eat, its flesh is so smooth and fine, and has such a cream-like flavor, that many call them Cream-nuts. These nuts are borne by a large tree, found on the banks of the Amazon, Orinoco, and other South American rivers, where it forms large forests. The nuts were known long before, but the tree was first described by Humboldt; this great traveler, with his friend and companion, Bonpland, were in South America near the beginning of this century, and finding that the tree was unlike any known before, they named it after their friend, Bertholet, who was then becoming celebrated as a chemist, hence the Brazil-nut tree is *Bertholletia*, and as it is a very fine, lofty tree, they gave it the specific name *excelsa*, which is the Latin word for lofty or high. The tree is usually over 100 feet high, and sometimes grows 150 feet, and has fine large dark green leaves, about two feet long, and half a foot broad. The cream-colored flowers are followed by the fruit, which is a large

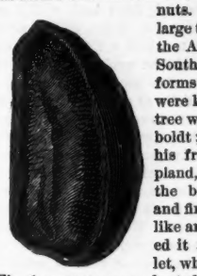
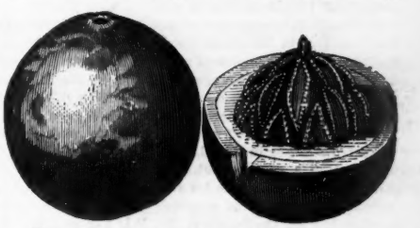


Fig. 1. BRAZIL NUT.



Figs. 2 and 3.—ENTIRE AND OPENED FRUIT.

round case or pot or jug, very much like a great wooden bomb-shell, six or eight inches through, which is shown in fig. 2, and, as you see, looks very little like a Brazil-nut; the nuts are inside, and whoever wants them must work for them, as the shell of this case or pot is about half an inch thick, and so very hard as to require heavy blows with a hatchet to break it. Figure 3 shows one of these pots sawed across without disturbing the nuts; they are placed around a central portion, to which, while growing, they were all attached, as it is through this they received their nourishment from the tree. You now see what gives them their 3-cornered shape, they crowded each other as they grew; you perhaps have noticed that when there are several chestnuts in a bur, they are shaped differently from the nut that has the whole bur to itself, and had plenty of room to

Fig. 4.—SAPUCAYA NUT.

Fig. 5.—FRUIT.

grow without crowding. There are from 18 to 24 nuts in each fruit, and so nicely are they packed away, that it is said to be impossible for one to put them all back again in the pot after they have once been taken out. I do not know how much one of these wooden jugs full of nuts weighs, but it must be several pounds. At all events, travelers tell of the great danger of entering the forest

when the *cabombas*, as the Brazilians call them, are falling; most of you know how it feels to be struck by an apple falling from a low tree, and can imagine that one of these heavy wooden pots, coming from 50 to 100 feet above, would be too much for even an Indian's head. At the season when the fruits are falling, the Indians arrange a sort of wooden shield to protect their heads and shoulders. The monkeys are exceedingly fond of the nuts, and will run great risks to steal them when the Indians are gathering them: it is said the Indians make the monkeys help them; by throwing sticks and stones at the monkeys in the trees, and these animals, who imitate what they see others do, use the fruits as bombs to "fire" back. At the top of the case, or jug, you will see, (in fig. 2), a hole, which is nicely closed by a cover which drops off when the nuts are ripe; a beautiful contrivance, you will think, to liberate the nuts from their hard enclosure. The opening, with its lid dropping off at just the right time, certainly does look as if it was especially arranged to let out the seeds—unfortunately the hole is *just too small* to allow a nut to drop out. Why every preparation should be made for letting the nuts out, and fail because the mouth of the jug is too small, is a puzzle, especially as we know that in the Sapucaya, a related nut, they do come out of their case by means of just such a hole, only larger. What it all means we shall probably find out some day, but it is quite sure that if the nuts could fall out readily, the boys and girls who buy the nuts, would have to pay much more for them, as the monkeys and other animals would make them very scarce. The nuts are not only collected to send to other countries, but the Indians live largely upon them, and make a great time of rejoicing over the harvest of *juvias*, as they call them. The Brazilians call the nuts *castanhas*—and the people who gather the nuts are called *castanheiros*, who go up the rivers in their boats and celebrate the occasion with music and dancing. A man, with a boy to pick up the fruits and bring them to him, will break about 300 a day. The kernels contain a great deal of oil, a pound of them will yield, when pressed, nine ounces of an excellent oil for burning and other uses.

Another nut, which is not so well known, as it is much less common in the shops, though often found in city fruit-stores, is the Sapucaya nut. This, shown in fig. 4, is about three inches long, somewhat bent like a letter S, with deep wrinkles on its surface, and a thin brown shell; the kernel is more delicate and of even a finer flavor than that of the Brazil nut. This is produced by another large tree in Brazil, and, like the Brazil nut, is enclosed in a case, or pot. The name of the tree is *Lecythis*, the Greek name for an oil-jar, given to the tree because it bears these strangely shaped fruits. The case, or jug, for the Sapucaya (fig. 5) is like an urn, with a nicely fitting lid, which falls off when the nuts are ripe; the hole in this case is large enough to let the nuts drop out. It is said that the monkeys, when pelted with stones, will not throw back these fruits, as they do those of the Brazil nut, but are too fond of the nuts to throw them down, and sit and eat them instead of showing fight. But if the natives can not use the monkeys to get the nuts, they can use the fruits to catch the monkeys. The hole in the fruit is just large enough to admit the monkey's hand, which he puts into the hole, and grasps a nut; but the hole which will let the empty hand to go in, will not allow the hand and a large nut to come out, and the disgusted monkey is in a quandary. The Indians take several of these fruits, *cabombas*, as they are called there, take off the lids, and lay them about under the trees; the monkey, being very greedy, will not be satisfied with trying one, but will put each hand into a pot and grasp a nut; he is too fond of the nuts to let go, and as he can not climb with such awkward mittens on, he is easily caught. The Brazilians say of a shrewd person, "He is too old a monkey to be caught with a *cabomba*," just as we say, "Old birds can not be caught with chaff." The jars themselves are put to various uses, and are called monkey-pots. As these most delicious nuts are very scarce and dear, because they fall out of the pot and are eaten by the monkeys, we may be glad that the hole in the Brazil nut pot is just too small.—"But did you ever see all this?" some bright-eyed youngster will ask.—I have seen the fruits, or pots, of both kinds of nuts, and have read the rest in books of travel by persons that I have no doubt tell the truth, and whenever I tell you things in my "Talks" that I have not seen myself, I try to make it appear, by using "it is said," and "I have heard," that I am giving information that I got from others. THE DOCTOR.

What is Foolscap Paper?—You probably all know foolscap paper when you see it; do you know why it is so called? This is the reason: When Cromwell became Protector of England, he caused the cap of liberty stamped upon the paper used by the government. When Charles II. came into power, he had occasion to use some paper, some of this government paper was brought to him. On looking at it he inquired the meaning of it; and on being told he said, "Take it away: I'll have nothing to do with a fool's cap." Thus originated the term *foolscap*, which has since been given to a size of writing paper usually about 16 by 13 inches.

Aunt Sue's Puzzle-Box.

ANAGRAMS.

1. It is tea hour.
2. Kiss me, Sir H.
3. Backward.
4. Sam rust tub.
5. Faces in icing.
6. Oh! red hot Rob.
7. Arouse ant.
8. In cream-pot.
9. Her insane Pop!
10. A rude pert.

CHARADE.

There are two words that Frenchmen speak
The one or the other most men seek,
To gain for friend and strong ally;
One 's of the earth, and one 's of the sky.
The joined together will disclose
A fruit that every person knows. HENRY.

CONCEALED SQUARE WORD.

1. It is so dark that even Jack wouldn't go now.
2. I don't think Eva need worry herself about him any more.
3. You must cut and send some more wood home today, Jack.
4. He says the stone struck him on the head. NIP.

CROSS WORDS.

1. My first is in knoll but not in hill,
My next is in factory but not in mill,
My third is in pensive but not in sad,
My fourth is in furious but not in mad,
My fifth is in coal but not in wood,
My sixth is in manner but not in mood,
My seventh is in companion but not in chum,
My eighth is in addition but not in sum,
My whole is a man well known to fame,
Arrange the letters and show his name.
STOCKBRIDGE.

2. My first is in cannon but not in gun,
My next is in pleasure but not in fun,
My third is in pudding but not in cake,
My fourth is in roast but not in bake,
My fifth is in Adam but not in Eve,
My sixth is in spin but not in weave,
My seventh is in noon but not in day,
My eighth is in potter but not in clay,
My ninth is in James but not in boy,
My tenth is in fun but not in joy,
My eleventh is in owl but not in rook,
My twelfth is in pocket but not in book,
My thirteenth is in orange but not in plum,
My fourteenth is in finger but not in thumb,
My fifteenth is in county but not in state,
My sixteenth is in bowl but not in plate,
My seventeenth is in acre but not in land,
My eighteenth is in rock but not in sand,
These letters place rightly and you will see
A very good friend to you and me. J. ADAMS.

NUMERICAL ENIGMAS.

1. I am composed of 17 letters:
My 7, 14, 4, 11, 15, 8, 10, is a continent.
My 2, 15, 14, 1, is a city in South America.
My 13, 15, 3, 4, 11, 15, 12, is a country in Asia.
My 6, 17, 15, 3, 4, 16, is another country in Asia.
My 9, 15, 3, 4, 5, 15, 1, is a country in Western Africa.
My whole is the name of a little girl who likes to read the *American Agriculturist*. BERTIE.

2. I am composed of seven letters:
My 1, 5, 6, 7, is without light.
My 4, 5, 6, 7, is to stamp.
My 3, 2, 1, is a boy's nickname.
My 2, 3, 1, is what all things must have some time or other.
My 3, 5, 4, 2, is what each one of us has.
My whole is a country in Europe. HUMPTY DUMPTY.

DOUBLE ACROSTIC.

The initials give the name of a famous poem, and the finals the name of the author of it.

1. A kind of fish. 2. To prohibit. 3. A season. 4. Denominating. 5. Is caused by trouble. 6. A nest. 7. Legitimate. 8. A disbeliever. 9. A Biblical mountain. 10. To shun. T. T. C.

AUTHORS.

(*Example.*—I am often to be seen
Frisking in the meadows green.—*Lamb.*)

1. Frightened, amazed with fear we stand
Beholding blood on every hand.
2. Opposed to aged; noting one
Whose earthly journey's scarce begun.
3. One of the powers, which, when braced,
Has often bulky weights displaced.
4. Thoughts that from joyous feelings grow,
On Nature's dial I soon show.
5. Something of many colors take,
Much like a coat of ancient make.
6. Owned by the gods, machine divine,
Although 'tis slow, it grinds quite fine. HENRY.

ALPHABETICAL ARITHMETIC.

OKP) RINHEC (AAOC
ACE
APH
ACE
OEE
OKP
CRC
CNC
EK

PUZZLE.

Take two thousand, one hundred and two,
And place them just where they should go,
You will then see what monkeys oft do,
As well as some children I know.

PI.

Warders dan ninesthumps era eth slsab fo dogc tomvergenn.

ANSWERS TO PUZZLES IN THE APRIL NUMBER.

ANAGRAMS.—1. Satyrs. 2. Usurped. 3. Severed. 4. Decimal, and Medical. 5. Despair. 6. Eastern, and Nearest. 7. Parental. 8. Umbellar. 9. Coagulate. 10. Costumer.

NUMERICAL ENIGMA.—Barking dogs seldom bite.

DIAMOND PUZZLE.

H
TEA
PIANO
JOURNAL
SOLITAIRE
HEARTHBRUSH
HEARTHANDHOME
COMBINATION
BUILDINGS
PATHWAY
CLOAK
IMP
E

CROSS-WORD.—Monday.

A PARTY OF GIRLS.—1. Minnie. 2. Helen. 3. Eva. 4. Mabel. 5. Hattie. 6. Carrie. 7. Edith. 8. Alice. 9. Cora. 10. Emma. 11. Madge. 12. Addie.

PI.—Constant occupation prevents temptation.

ALPHABETICAL ARITHMETIC.—209)74586(356. *Key:* Pink Flower.

ISLANDS.—1. Spice. 2. New Guinea. 3. Seychelle, Seashell. 4. Skye. 5. Turks. 6. Manitou.

TRANSPOSED DECAPITATIONS.—1. Edna, Dan. 2. Burin, ruin. 3. Dwina, wain. 4. Olive, levi. 5. Althea, health. 6. Bugle, glue.

Thanks for puzzles, letters, etc., to F. W. Parks, Geo. H. Fuller, B. F. Ross, J. C. Leitch, F. J. P., E. S. D., F. W. Tuttle, Two Orphans (you can take your choice of the "Snowman, Cardiff giant, or Senator Johnson"), E. D. S., Mary A. A., W. R. F., K. P. N., Mame, Aggy S., J. H. Noble, and American Jack.

Send communications for the Puzzle Box to Aunt Sue, Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

The Sunflower Girl.

What do you suppose the artist had in mind when he drew the "Sunflower Girl?" Did he wish to show the simple beauty of a young girl, against the gaudy flaunting beauty, such as it is, of the sunflower? It can hardly be that, for the Miss is not of the simple kind of beauty; on the contrary, she is very much fixed up, over-dressed we should say; very far from simple. It may be that she has begun to study botany, and is taking the specimens to examine—but she does'nt look very studious, and we fear she thinks too much about dress to study plants! Perhaps she is giving a party to her young friends, and is taking the sunflowers to the house to decorate the room, but that seems hardly probable. After all, it is most likely that this is a young city Miss, who is making a visit to the country. How wonderful it all seems to her, so much room everywhere, and grass, trees, birds and flowers! How unlike the crowded streets and narrow houses of the city. Flowers everywhere; half wild with delight she runs from one to the other, and at last sees the tall sunflower, which seems to her more wonderful than anything she ever saw before, so forgetting all about her nice dresses, she takes as many of these great flowers as she can carry, and hurries to the house to show her wonderful discovery. Her country cousins say: "They are nothing but sunflowers,"—and her mother says, "My child, look at your dress—if you are going to run about in that way, and soil your dress, you shall wear an old one."—That's just what the poor child wants. What a mistake some persons make who go into the country, they lose a good part of the enjoyment of it because of their dress. Happy are those children whose clothes are never too good to allow of fun and frolic.

Aunt Sue's Chats.

EUNICE W. Y. writes from Philadelphia—"*Dear Aunt Sue;*—Two puzzles have been going the rounds here, which have caused quite a commotion. We have studied all sorts of histories, and consulted wise men, but all to no purpose. Little Minnie S——, whose father takes the *Agriculturist*, said, 'ask Aunt Sue about it, *she* will know the answer.' So I take her hint, and if you can give us any light on the subject we shall be greatly obliged."

Puzzle No. 1.—"Charade."

"A headless man had a letter to write,
'Twas read by one who had lost his sight,
The dumb repeated it word for word,
And he was deaf who listened and heard."

Puzzle No. 2.

"To five and five and fifty-five
The first of letters add;
'Twill make a thing that killed the king,
And drove a wise man mad."

I am happy to strengthen "little Minnie's" faith in Aunt Sue, by giving you the solution of both the puzzles. The first is a sort of constructive "Decapitation," and had it been fairly named, it would have been less of a puzzle. "A headless *man*" is simply "*an*"; the "an" we promote to "Ann." Ann "had a letter to write," and the letter she wrote was the *letter* "*O*," or *nought*; "nought" is "nothing," and that is exactly what the blind saw, the dumb spoke, and the deaf heard. *That* is "easy enough when you know how," isn't it?—The second puzzle is stated incorrectly, otherwise you would have soon guessed it. It should be:

"To five and five and fifty
The first of letters add," etc.

"Five and five"—V and V—put close together, make W; L stands for "fifty"; and "the first of letters" is A. So then you have W—L—A,—nothing very dreadful

in that; but just transpose them into "LAW," and I think you will find sufficient to drive wise men mad, especially if they get into Chancery with it.

IDA S. T.—I do not like to discourage the little ones; but we have a great many "numerical enigmas." An answer to the whole is sufficient, without writing each separate item.

J. H. T.—Much obliged for the puzzle you send, but we do not wish to publish any but original ones.

M. and W. S. N.—Thanks for your "alphabetical arithmetic," but I can not use it, for I think it is utterly unsolvable. I see no possible way of getting a clue to it.

GEORGE H. F.—We make no distinction in our PUZZLE BOX between "North" and "South," all are welcome.

How Engravings are Made.

All boys and girls like pictures; who ever saw one who did not? Long before the little brother or sister can talk, you can amuse the baby by showing it pictures.

Fig. 1.—BLANK.

Sometimes boys or girls will be so much interested in pictures that they wish to know how they are made, and letters have now and then come asking us to tell about them. We are reminded by a letter from Chas. W. M., Tuscola Co., Mich., that we many months ago promised to say something about engravings. Charles and his sister have been talking the matter over, and being unable to satisfy themselves, they have concluded to "muster up courage" to write to The Doctor. Charles and his sister, and every other boy and girl in the whole family of young *Agriculturists*, should know that it does not require the least "courage" to write to The Doctor or others of the editors, who are all ready to help them—though they may not always answer their questions right off. Charlie writes such a clever letter that it is a pity we have not room to print it. His questions show that he does not know that there are several very distinct kinds of engraving; the principal kinds being on wood, on metal, and on stone, and the ways of making these, and of printing them are about as unlike as the materials that are used. The most common kind is

WOOD ENGRAVING.

By common I do not mean poor, though the very poorest as well as some of the very finest engravings, are made in this way; but that these are more used than any other. I will try to tell you something of the different kinds, and begin with this first. Wood engravings, it hardly needs to be said, are made with wood, and for the better kinds only one sort of wood will answer—box-wood. You know the box of the gardens used to make edgings to beds, and what a slow growing plant it is, with its little shining evergreen leaves. In southern Europe, and in Asia, it grows to a tree, with a trunk 8 inches or more through. Such trees are hundreds of years old, and the wood is so close and fine that the rings made by each year's growth can scarcely be seen. This wood is cut into slices crosswise about an inch thick, and sold by the pound; the preparing of the wood is a business by itself; one surface is made very smooth, and if large blocks are needed, they are made by gluing small pieces together, and very large ones are strengthened by bolts running through them. For coarse engravings, other hard woods, such as pear and apple-tree wood are used, and for such work as the great circus show bills, mahogany and even common pine are used. So much for the material. If you take a block of wood and ink its surface with printer's ink and then press it down upon paper, the ink will leave the block and stick to the paper, and you have a clear black spot, as in fig. 1. Now if you take your knife and cut a groove like a V on the surface of the block and then ink it and press it on the paper as before, your print will, as in fig. 2, show a white line through the black, as the ink would not go into the groove, and if it did, the paper would not reach the sides of the groove to take it out.

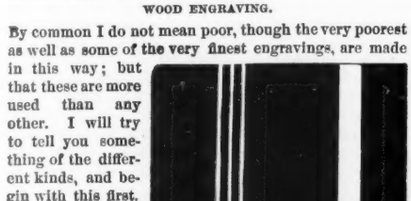


Fig. 2.—WIDE AND NARROW GROOVES.

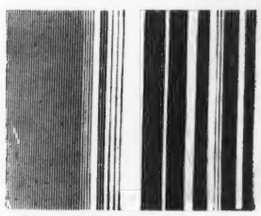


Fig. 3.—GROOVES AND TINT.

Fig. 4.—ENGRAVER'S TOOL.

On this block are one wide groove and three very narrow ones like deep scratches. If several grooves are cut a little distance apart, and a print of the block taken with ink, it will then show several lines, and these lines will be heavy or light, as there is more or less distance between the grooves. Figure 3 is printed from a block which Mr. Hinkle cut for you, that you may see how a block with grooves of various sizes will print. You see that where there is a wide part of the face of the block left uncut, it prints solid black, where the wood is cut away, making a wide groove, it is clear white, and where there are several grooves very near together, it prints lines, and the black of these lines with the white between them, makes a gray tint. You can readily understand that these lines may be curved in any manner, and the same effect would be produced. The *untouched* surface of the block receives the ink and does the printing, and where the surface is cut away, there will be no ink, and this part of the block will, so to speak, print white. The size of the lines and their closeness makes the tint. Suppose we wish to have the letter O in a wood engraving, it would first be carefully drawn with a pencil, and this is not the engraver's business, but the artist's. The letter being drawn exactly as it is wanted, the engraver takes it and cuts away the surface of the wood for a slight depth all around the outside, and then from the inside of the letter, and leaves the surface of the wood where the pencil marks are, untouched. He would do the same if, instead

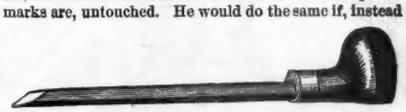


Fig. 5.—ENGRAVER'S TOOL.

of a simple letter, he had a highly ornamented one. A picture in which there is not only form, but light and shade, about which we shall tell more hereafter, is treated in the same way, it is his business to cut away all the surface of the block that is to be white. To do this cutting he uses tools made for the purpose; these tools, called gravers, are of different sizes and shapes, two of the common ones are here shown; fig. 4 has a wedge-like point, and fig. 5 has a sort of diamond point, and there are those of other shapes, some of which will allow a wide and others a very narrow groove to be made. These tools are made of the best steel, and kept very sharp. The manner of using them can hardly be described, and can only be learned by practice. A good engraver will cut a series of grooves side by side, leaving a narrow line of unbroken surface of the wood between them, the lines so fine that you will need a magnifier to see them, and the magnifier will show the lines all perfectly true and unbroken, and all at the same distance apart. Thinking that you will understand from this the principle upon which wood engravings are made, the story of how the picture gets upon the block before the engraver takes it in hand, will be told at another time.

Drying Plants.—Sarah M. T. We are glad that you wish to know how to dry the plants you collect, and no doubt other girls, if not boys too, would like to do so. Laying the plants between the leaves of some large book of little value, will do for a few, but it is a poor use to which to put a book, and allows of only slow work. Get some newspapers, printed on as soft, thick paper as you can find, and fold them to make pads of several thicknesses—at least 6 or 8—putting two papers together if need be—and of convenient size. Botanists make them 18 inches long by 12 wide, but you can make them smaller if you choose. Put a few stitches through them to keep them from separating. These are your "driers," now prepare a number of single folds of newspaper of the same size—a single fold like a sheet of letter paper, these are the "folds." Then you will need several boards, all the better if kept from warping by a cleat at each end. Two may do, but more will be handy. Having collected the plants, place two driers on one of the boards, open a fold and lay the plant out as naturally as possible upon one-half, fold over the other half, place this fold with the plant in it upon the driers, and put another drier on it. Put more plants in other folds in the same manner, and put them on the pile with driers between. When all are done, put a board upon the top and upon that a heavy weight. A box with stones in it, fitted with handles to lift it by will do, or you may do up bricks in parcels of four or more with some strong paper and twine and use several of them. As a Miss is not able to lift very heavy weights, it is better to have the weight so fixed that it can be handled a part at a time. With small plants you can put several in a fold. The driers need to be changed every day, and for the first few days it will be better to do it twice a day. To change, lay a fresh drier on a board, then take off the drier from the pile and carefully lift the fold and place it on the fresh drier; put on this another drier, and so on, building up the pile again as at first. Spread the driers that have been used, to dry, and have them ready for the next change. Do not open the folds to look at the plants until the paper no longer feels damp, as they should not be disturbed. You will see that an abundance of driers will be handy. You can tell after a little experience when the plants are dry; they become dry to the touch, and stiff enough to hold their shape when lifted. No rule can be given, as the plants vary greatly in the time required; some dry in two or three days, and others will require a week or more. Lay the plants away in the folds until ready to arrange them, and in a place free from dust. You of course will place with each a label with the name of the plant and place and date of collecting It takes long to describe, but is not near so difficult as it seems. It is well to place the driers in the sun, and use them dry and warm when you change. The more rapidly plants are dried the better will the colors keep, but there are some plants which will turn black on drying, no matter what care may be taken. The Indian pipe, which is pure white, is one of these. In very damp weather it will be necessary to dry the driers by the fire. It is better in pressing to assort the plants, and not put large and small ones together in the pile. Separate each day's collection by a board or pasteboard.

June.

Is it not strange that we do not know the reason why several of the months are called by the names we daily use for them? We told you last month that there was much doubt why May was so called, and there is quite as much trouble about June. Some say June was named after Juno, one of the ancient goddesses; others that it was named in honor of Junius Brutus, the Roman Consul, but the best reason of all is that it is the month dedicated to the young men, who in Latin are called *juniores*. But there is no good reason why it should mean young men and not include young women, and then you know young men and women may be *very* young. Here's a discovery! June, from *juniores*, is nothing more or less than the young folks' month—the Boys and Girls' month. Yes, that's it. Hurrah for June! the youngsters' month! That's an enough sight better reason for the name than any ancient heathens or their gods.—Why shouldn't it be the young folks' month, for with us it is the pleasantest of all? It is bright and fresh and gay and full of life and sweetness, as all young folks should be. Yes, children, claim June as your own month; if any care to dispute it, say that you are juniors, and even *juniores* if they prefer it, and it is much better for the month to be called in your honor than in that of Juno, who, if she ever existed, was a very disagreeable person, or Junius Brutus, who has been dead over 2,000 years, and isn't of half so much importance as one live junior. It's your month!

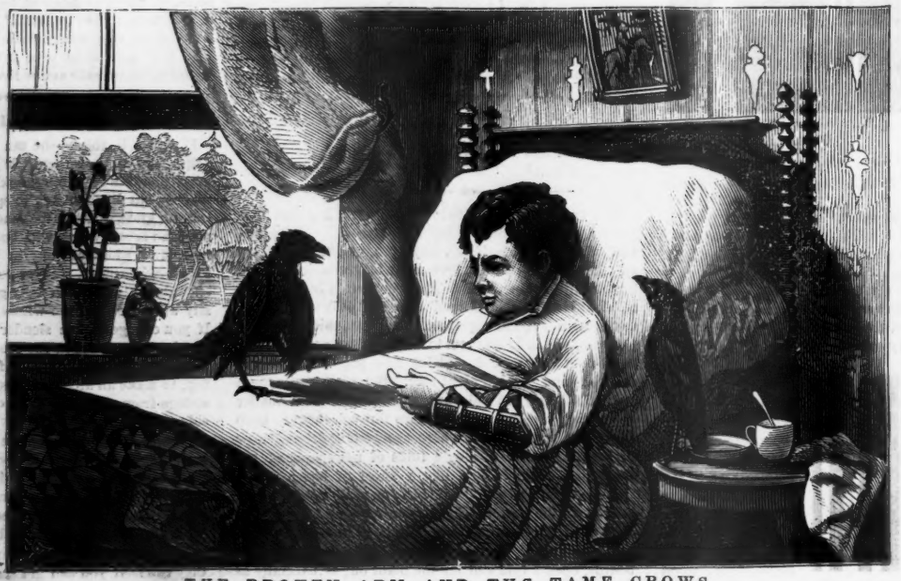
That Little Arbor.

Florence B. thinks she can make, with her brother's help, a little arbor in her little garden, and wants to know what plants will climb quickly, and can be easily got. She has but little money to spend for seeds and plants, but she knows that with some brush and strings she can make an arbor, which will be nice to sit under.—A good idea, Miss Florence—but in the first place, unless you have a *big* brother, we fear you will not make it strong enough. Vines, when they grow up, are heavy, especially when wet, and the winds take a strong hold of them. If you can get some slender poles, or long brush, you can have them set in the ground in two rows, and then bent over, brought together from opposite sides at the top, to make an arch, and tied there. Then you can run strings from one pole to the other, horizontally, on each side. It would be well to have it tall enough for a grown person to stand up in, as you may have company, and it should be wide enough for several young people, and a little table. You can make nice enough seats out of boxes, and all the neater if you can find something to cover them with. But for the vines—the two easiest things to get are morning glories and beans.—"Beans!"—Yes, do not despise them, Limas have beautiful foliage, and how they run! If you can get scarlet-runner beans, you can have flowers too; otherwise plant morning glories with the beans, and let them grow together; put three or four seeds of each near the foot of each pole of your arbor, and as they grow, train them where you want them; use strings where needed. You can buy a number of vines of the florists, but these will cost quite a sum, while the beans and morning glories will make just as good a shade, and cost almost nothing.

The Broken Arm and the Sympathizing Crows.

He hardly knew how it happened.—"You see that Jim and I were both running for the ball, and somehow I went right down, fell upon the ball, and when I came to pick it up, I could not. My fingers wouldn't move, then I felt faint, and didn't know any more about that game of ball."—That is the way Fred described it after the doctor had been and put the arm in splints, and his mother had sufficiently recovered from her anxiety to talk with him about his broken arm. A broken arm! and nothing to do but wait for it to get well; nothing can be done to hasten it, but Fred must lie there and be patient. It pained him often so that he could not read, besides it was tiresome to hold the book in one hand. It was haying time, and extra hands in the fields made extra work in the kitchen; father and brother must be in the hay, and mother and sister were so busy, that Fred was left alone a good part of the time, and had to depend upon himself. He could hear the rattlety-click of the mower, and as a load of hay went by to the barn, he could get a sniff of its odor. Oh how sweet it was! but that was all that he had to do with the haying from which he expected so much fun. His sister had brought her pet geranium and set upon the window-sill for him to look at; he thought he would watch and try if he could see it grow; so when he found that at the end of half an hour it was not a bit taller than before, he said to himself—"I know it does grow, but how very slow it is; it seems to me that everything is slow; here is this arm of mine—the doctor said that 'in youth a simple fracture unites with great facility'—and grandmother, who came over when the doctor did, said—'law, yes! young 'uns' bones knit kindly'—which, I suppose, means the same thing, but doesn't sound so learned. Well, here I am—let's see how long I have been here—only five days! It seems to me like three weeks."—And then Fred began to get impatient.—"This arm of mine, will it *never* get well!—'Never'—suppose that when our bones got broken—they could not be mended! fearful to think of. It is wonderful that bones so hard, and lifeless as they look, should grow together again. We can't put on anything to stick 'em together just as you'd glue up the broken arm of a chair, but they just get the ends nicely together and bind them so that they will stay there, and it gets well itself. I asked the doctor to tell me about it, and as there were no old folks around, he didn't use any big words, and I thought I understood him. Let me see if I can remember what he said—it was something like this."—"You see, Fred, that a bone isn't just like a piece of iron or marble, it has structure—parts—while the bones of our bodies are a framework, to strengthen them, they are a *live* framework, and the bone in your arm is as much alive as the flesh over it, and, like other live things, has to be fed; a bone looks solid, but minute channels run all through it, so that blood may be carried to all parts to feed or nourish the bone. Then there is the earthy part of the bone, and the animal part; if you take the bone of an animal and soak it in an acid called muriatic, that will dissolve out all the earthy part of the bone, which is a kind of lime compound called phosphate of lime, and leave the animal part of the bone, or cartilage, and this will be just as big as the bone was, but it can be bent, and if the bone was a long one, the cartilage may be tied into a knot; you see that this cartilage would never do for our frame-work, we need something that can not be bent and tied into knots: so all through this cartilage there is deposited in every part of it the lime phosphate, or earthy matter, to stiffen it, just as your mother puts starch into your collars to make them stiff. There is a great deal more about bone that you may learn some day, and some interesting things I can show you with the microscope when you come to my office, but I had to tell you so much in order to explain about the mending of the broken bone. It is a wonderful provision of nature—which is only another way of saying that God has made it so—that when living bodies are injured, there is generally at once an attempt to repair damages. When you cut off a branch of a tree, the bare surface will, after a while, be covered with new wood and bark; if you cut your finger, there is an attempt at cure at once, though you don't see it; so when a bone is broken, it, so to speak, begins to repair itself at once; I can't tell you the whole story about it; but this is, in short, what happens: a portion of cartilage is formed between the two ends, as the beginning of the repairs, and afterwards this is strengthened by the earthy matter, the lime, which the blood deposits in it particle by particle; the first joining is not very strong, but holds the bone together, until after a while the new bone that joins the parts is as hard and strong as ever. So you see, my boy, why I keep your arm tied up so tightly. We must help nature all we can, and give her a chance to mend the break."...."Yes," said Fred, "that's about the way the doctor told it, and how wonderful it all is, first the cartilage and then the bone slowly made stiffer and harder with the lime phosphate. It is slow work, this mending, but I'll try to be patient. How much sooner I can go out than if it had been my leg, though! That's one comfort—to know it is not as bad as it might have been. Then how kind everybody is when a fellow has an accident! Father came in yesterday noon, he thought I was asleep, and I saw two big tears run down his brown cheeks; then sister brought me the plant she thinks so much of; Jim found a patch of wild strawberries at the edge of the meadow, and picked them for me; it seemed to me as if no garden strawberries ever could be so good—else I somehow tasted Jim's goodness in them. If they are too busy to stay much in my room, I see something many times a day that shows they are all thinking of me. But the funniest thing of all! There's that Sam Rounds, who lives up just beyond the red bridge; Sam 's a little red-headed, speckle-faced fellow, and at school last winter a big fellow imposed upon Sam, and I just took Sam's part. When Sam heard I had broken my arm, he wanted to do something to show me that he was sorry, and he sent me—of all things in the world!—a pair of young crows that he had been bringing up by hand and taming. They have made themselves quite at home; their wings are clipped, and they can't fly, but Sam put a pole at the window, and showed them the way, and they come in every day; they are almost too tame, but they are so amusing, look so solemn, and act so comically, that I have to laugh. They seem to be in partnership, for the other day one pretended to be very sympathetic, and cawed and grimaced at me, while the other all the while was trying to steal the spoon out of my cup; they have a great liking for anything bright, and will carry off and hide such things. They are amusing now, but I am afraid they are too mischievous to keep. Mr. Fuller had a tame crow, who would follow him all about his garden, but when he was away, the crow would pull up every label he put out to mark where his seeds were sown! Mother and sister wouldn't like that, so I must try to get rid of them without offending Sam....Well, old arm, how are you getting on?—is that phosphate of lime being deposited all right in the cartilage?—the doctor called it 'process of ossification'—to mother and grandma—keep at it and ossify—that's a good arm.—But, oh dear!"

THE SUNFLOWER GIRL.—(*See page* 230.)



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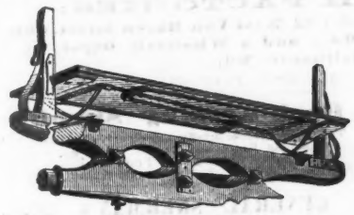

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1½	1,500 "	10 00	6	6,000 "	19 00
2	2,000 "	11 00	6½	6,500 "	20 00
2½	2,500 "	12 00	7	7,000 "	21 00
3	3,000 "	13 00	7½	7,500 "	22 00
3½	3,500 "	14 00	8	8,000 "	23 00
4	4,000 "	15 00	9	9,000 "	24 00
4½	4,500 "	16 00	10	10,000 "	25 00
5	5,000 "	17 00			

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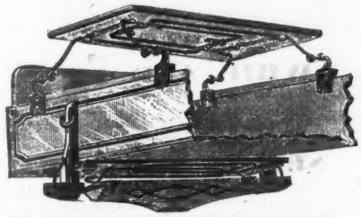

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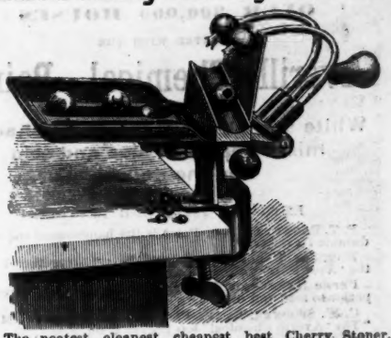

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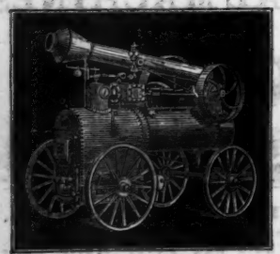

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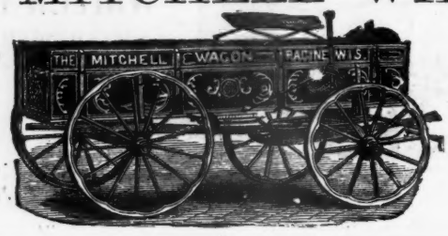

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 211.

To Prevent Galls.—"P. O." To prevent collar galls on horses in the summer time, wash the shoulders every night with cold water, and rub dry with a towel. Also scrape the inside of the collar clean, and keep it very hard and smooth. Collar pads stuffed with wool, are injurious rather than helpful, and collars lined with flannel should be avoided. A leather lining is the best, and it should be kept very smooth by occasional dressing with fish-oil, and burnishing with a smooth piece of hard wood. The collar should fit snugly but not too tightly. If a collar fits well there will seldom be any galls; if it does not, no amount of care will prevent them. A smooth leather pad at the top of the neck, is as good as any other kind.

Culture of Mangolds.—P. Ott. An article on the culture of mangolds, was published in the "Ogden Farm Papers," of January, 1873.

Size of a Cistern.—"P. A. V.," Dakota Terr. A round cistern, 8 feet in diameter, and 10 feet deep, made rounded at the bottom, will hold 100 barrels of water. For a four inch wall (or one brick thick, placed flat and lengthwise in the wall) 1,680 bricks will be required. One barrel of cement, and one cubic yard of sand (or 18 bushels) will lay the brick and cover the bottom.

Scrofula in Pigs.—"J. H. H.," Stephenson Co., Ill. Pigs are frequently subject to scrofulous diesases. These appear in the shape of swollen heads, sore mouths, ulcers on the tongue and jaws, and gangrene of the extremities; sometimes known as loss of tail and hoofs. When young pigs are thus attacked, there is no remedy, and they die from inability to suck. A sow which produces such pigs, should not be bred from, and will not be wholesome food if made into pork.

Culture of Castor Beans.—"B. W.," Nodoway, Mo. After the young plants appear above the surface, it is necessary to cultivate the ground as with a corn crop. The young plants are too tender to be harrowed. Two plants are left in the hill, and are cultivated or plowed five or six times. Early in August the crop will begin to ripen, and the pods are gathered twice a week until frost comes. To harvest the crop, drive a wagon over every fifth row, gathering the pods that are turning in color from two rows on each side, and at each gathering always pass over the same row in the same direction, gathering the pods ahead of the wagon on that row. The gathered pods are spread in a yard surrounded by a close fence five feet high, and are stirred and exposed to the sun until the beans pop out. If rain occurs, they must be covered, or they will be injured.

Saving Rennets.—Since the late increase in the manufacture of cheese, the demand for rennets has become very lively. The cheese factories use a great many of them. A large number are wasted, because the manner of saving them is not generally known. The stomach of every milk-fed veal that is killed, or every "deacon," should be saved. The fourth stomach only is taken. This is not the paunch, but that next to and beyond the "maniplies," and that from which the gut leads. It is cut off close to the maniplies and the gut, and is turned inside out, to empty the curd, which may be in it, but is not washed. It is then salted well, and turned again. The outside is then well rubbed with salt, and a handful of salt put inside. It is then stretched upon an elastic bent twig, and hung up to dry. When dry it is ready for sale. Any produce dealer in New York will buy them, or any cheese factory.

Insects on House-Plants.—"Mrs. L. M. N." has tried tobacco for the green fly, and washing for the green spider, and still her plants are tormented, and the insects grow fat. We can only say that these applications never fail with us, and there must be a want of thorough treatment. Put the plants in a large box, or under a barrel, where they can be thoroughly smoked with tobacco, and at the end of a couple of hours give them a thorough showering. Repeat it every three days, and the green fly will give it up at last. For the red spider, wash the smooth-leaved plants with a wet sponge on both sides of the leaves. Lay the others on their sides, and thoroughly shower the undersides of the leaves; repeat this every two days, and keep at it, until the insects disappear. Perseverance will conquer them.

Sale of Grade Norman Horses.—Fifty head of grade Norman horses, mostly half to three-quarter blood, were recently sold at public auction at Summit, Cook County, Ill. Colts of two to three years were sold at low prices, ranging from $50 to $375, and brood mares brought only from $100 to $360.

To Kill Wild Oats.—"J. B.," Saint Paul, Oregon. There is probably no plant that a thorough summer fallow will not kill in time. By perseverance the ground may be totally freed from vegetation of all kinds. But there are some plants the growth of which is actually encouraged by partial summer-fallows, badly conducted. A summer-fallow to be effective must kill every sprouting root or seed while it is in its early tender stages by constant plowing, harrowing, and cultivating. Perennial roots must be harrowed out, and those that possess great vitality must be picked off and removed from the land. Such a summer-fallow is costly, and it is almost equally effective to grow a succession of hoed crops, such as corn, potatoes, or roots alternated with crops of quick and close growth, such as peas, buckwheat, flax, or clover. To grow fall wheat upon foul land is only to perpetuate the weeds.

How to Use Muck.—"C. L. S." A supply of swamp muck of good quality is a valuable accessory to a farm. There is no necessity to haul it to the barn-yard and back again. A certain quantity might be serviceably brought to the barn and used when dry as bedding for the stock, leaving the straw to be fed. But it would be better to carry the barn-yard to the muck than all the muck to the barn-yard with a great cost of labor. The better plan in such a case is to draw the muck to the field where it is to be used, after it has been dried for some months, and there mix it with the manure from the barn-yard, and let the whole ferment together. Other portions drawn and mixed with fresh dry-slacked lime in the heap as it is made; the muck soon rots, and we have found it very useful as a dressing for grass. Intelligently used, muck is valuable, but otherwise will hardly pay for the digging and hauling.

Calcareous Soils.—"L. L.," Washington Co., Texas. A calcareous soil may be greatly improved by plowing in green crops, such as buckwheat, clover, or the southern cow peas.

"This is Foolishness."—"J. G. J.," Andrain, Me., thus relieves his mind after reading a statement in the *Agriculturist* of January, 1875, that three horses with a double furrow plow can do as much work as four horses with two single plows, and frequently the same team will do double the work with a double furrow plow that they can do with a single one. This may *seem* to be foolishness to some, but it is a fact. One great saving in using double furrow plows is rarely thought of, there are only half as many turnings at the headlands, and all that loss of time is saved. Besides the horses in this case in plowing two acres only walk as far as they would in the other, to plow but one acre, and the saving of labor in carrying their weight about is another great gain. Double furrow plows must soon come into use, especially upon mellow, easily worked lands, so that one man can do two men's work. Farming is behind all other mechanical industries in time-saving machinery, especially so far as regards plowing.

Corn for Green Manure.—"J. A. Y." We have not much faith in corn for plowing under as green manure. The land that will grow a crop of corn will grow buckwheat, peas, oats, or spring rye, any of which would be more easily turned under, and some of which would be better fertilizers than corn. Two crops of buckwheat can be grown and turned under while one crop of corn is growing. But if there is barn-yard manure enough to cover the ground, it is waste of time and labor to grow green crops to plow under. It would be as well to let the ground lie until June or July, and then plow it and cross-plow again in August for a wheat crop, and next spring sow down to clover, plowing that under the second year.

Sales of Short-Horns.—A large number of Short-Horn cattle have been disposed of at recent sales. At Bloomington, Ill., on April 28th, 140 animals, the property of Messrs. Smith, Nicolls, Franklin, Funk, and Duncan, sold for $48,399, an average of $345.70. The highest price being $2,000 for a cow of the Princess blood. On April 29th, at the same place, the herd of J. H. Spears & Son, consisting of 40 head, were sold for $46,370, an average of $1,159.25; the highest price being $10,500 for the bull, 21st Duke of Airdrie, 4 years old. The herd of J. H. Pickerell, of Harristown, Ill., numbering 23 head, sold for $29,005, an average of $1,261.09. The bull Breastplate sold for $6,100. In Iowa two large herds, the "Wapsie" herd of S. W. Jacobs, of West Liberty, of 82 head, and the herd of Milton Briggs, of Kellogg, Jasper County, of 139 head, have been disposed of. The first sale amounted to $49,215, an average of $727 for cows, and $274 for bulls. The second sale realized only $37,630, an average of the small sum of $279 for cows, and $235 for bulls. Mr. Briggs' herd was in poor condition, most of the bulls suffering from mange, which accounts for the low average. Several other less important sales have occurred which, with those mentioned, have been the means of distributing a large number of good animals at very reasonable prices, amongst farmers in whose herds these animals will undoubtedly work great improvement.

Wolf Teeth in Horses.—"J. S. G. L.," Juniata County, Pa. Wolf teeth do not cause blindness in horses. They are in no way injurious to a horse, but the popular idea to the contrary arises from the fact that they appear at the time when the colt, then in its third year, is cutting its permanent teeth. These displacing the first teeth either appear in their place or by the side of them, in which latter case the displaced teeth are called wolf or wolf's teeth. They generally fall out, their roots being absorbed, but if they remain no harm occurs. Diseases of the eye have no relation to these teeth, but there are abundant causes in the usual ill-management of colts at this critical period, and afterwards, for those diseases to which horses are subject.

Trapping Muskrats.—"J. H. J. C." Directions for trapping muskrats are given in the *Agriculturist* of March, 1872.

Death of a Horse from Bots.—"D. C. S.," German Settlement, W. Va., asks what killed his horse. It was taken with a sudden chill after feeding and watering, and then with a sweat, while its legs were cold. He administered medicine for the flatulent colic but to no purpose. The horse lived in this state about sixteen hours, sometimes striking and kicking, but never tried to get up, and at last died very suddenly and easy. When opened there were found two small holes in his intestines, and just enough had passed out to stain the outside. He found the communication between the stomach and first intestine filled with bots. It was closed up so tight that nothing could pass through. The stomach was nearly full of liquid, caused by purgatives given him, and nothing was found in the colon or intestines, nor even in the rectum. Now the question is, what killed the horse? was it the bots, or was it those holes in the intestines. The bots had stuck themselves fast to that canal or small communication.—We should say the horse died of the obstruction of the pyloric orifice of the stomach. The rupture of the intestines was probably accidental in the postmortem examination.

Tall Meadow Oat Grass.—"S. K." *Arrhenatherum avenaceum*, or tall meadow oat-grass may be sown exactly as timothy is sown. It is an excellent permanent grass for meadows or pastures, as it starts early, and has a rapid late growth after mowing. The bushel weighs seven pounds, and three bushels of seed should be sown upon an acre. Clover may be sown with it as with timothy.

How to Become a Locomotive Engineer.—"C. C. G." To become a locomotive or any other kind of engineer, the business should be learned by apprenticeship in the shop. A thorough engineer must have learned his business in the mechanic's shop first, and know how to build an engine. There are many, however, who have learned their business by serving first as fireman on an engine, but they can never become as competent as those who know everything about the construction of their engines. To go on a train as a brakeman will never teach a young man to become an engineer.

Agricultural Machinery at the Centennial.—The Centennial Commission is making thorough provision for the reception and display of agricultural implements. A section of the Agricultural Hall will be set aside for the exhibition of farm appliances. Within the Hall will be steam-power for driving machinery. It is contemplated to test implements in the field. Manufacturers, designing to compete in the field, will be required to use the same machines they offer on exhibition. Inquiries may be addressed to the Chief of Bureau of Agriculture, Philadelphia.

Pomology at the Centennial.—It is intended to have a continuous fruit show at Philadelphia next year, from May until November. Some of the societies are already moving in the matter.

Stock-Raising in the West.—"W. S.," Washington. The growth of grain in the west is not nearly so profitable nor so safe as raising stock, but it requires less capital. The capital required to begin with stock would be somewhere about the following, say 200 head of selected Texan heifers two years old, at $7 per head, $1,400; 4 young, pure-bred Short-horn bulls, purchased in Kentucky, at $150 each, $600; 640 acres of land for winter pasture which may be bought well located for this purpose, for about $5 per acre, payable in ten year's time, fencing, corralls, shelters and huts say $1,500, including payment on the land; there will be in addition the cost of attendance, cutting hay, and some corn for winter feed, which can hardly be estimated, for three years before any sales can be made, which will doubtless use up the balance left out of $6,000. Summer pasture on unoccupied prairie will cost nothing for many years. The first income would be in the fourth year, when 70 or 80 three-year old steers, worth possibly $30 a head, would be ready for sale.

Book upon Fish Culture.—"M. F.," Clarion Co., Pa. There is no book published upon fish culture that will teach any person how to make money by raising fish in ponds at 15 cents a pound. Fish culture will do for an amusement, but not for a business to make a living by except in very rare cases.

Cranberries on Trees.—A correspondent at Albion, Ill., writes: "Do not cranberries grow on a vine, on or near the ground? Is there a variety which grows on a bush or tree? The famous 'poplar peach tree' agent has sold and delivered a good many cranberry bushes in this county, which are four or five feet high, and resemble a snow-ball bush very much."—Cranberries grow on a weak, prostrate vine, and near the ground. "High-bush Cranberries" grow upon a shrub, but these are no more cranberries, than horse-chestnuts are chestnuts. No wonder the bushes look like Snow-ball bushes, as this High-bush Cranberry (*Viburnum opulus*) is the wild and, so to speak, single state of the ornamental Snow-ball. If the agent sold these shrubs as *cranberries*, you can prosecute him—if you can catch him—for swindling. If he sold them as "Bush-Cranberries," and people bought them supposing they were regular cranberries, it is their own fault. Tree-peddlers are very excellent people to avoid.

Hyacinths.—"Reader." Bulbs that have flowered once, are worth nothing to force again. They will give an inferior bloom, if set in the garden, and may be kept dry in the pots until fall, when they may be planted. We did not reply by mail, as requested, as we could not make out your P. O. address.

Popular Music Books.—We have received from Messrs Lee & Walker, music publishers of Philadelphia, The Young Organist's Album, The Music Teacher, The Musical Manual, The Gospel Singer, School for the Parlor Organ, Melodeon, and Harmonium, Musical Pastime, and Clarke's New Method for the Piano-Forte.

Crossing Wheat and Rye.—It would really seem as if Mr. Stephen Wilson had succeeded in making this cross. He tried oats and barley, and Conch-grass as well, and got a good many seeds; but, of those that grew, the wheat came up wheat, and the oats oats, excepting two plants, which came from grain of a wheat plant fertilized by rye pollen. These plants, which were exhibited at the Edinburgh Botanical Society, looked intermediate between wheat and rye, and so did the ear. But its flowers produced no good pollen, and set no seed. So that was the end of it.

The Gumming of Fruit Trees has been investigated by a distinguished French physiologist, Prillieux. It is a true disease, mostly of the cambium. It begins in single cells, in which the starch is transformed into gum; and this sets up, by a sort of contagion, an unnatural action in the surrounding cells, which become unduly filled with starch, and then this starch turns into gum. To cure this diseased action, strong incisions in the bark are recommended. These excite an active production of cells at the surface, and so divert the nutriment from this abnormal activity, to a different and more healthful action.

As to buying a Farm.—"J. H.," New York. $2,000 would go but very little way towards buying a farm near the city of New York Many persons have gone into new western states and taken up homesteads, or bought cheap lands from railroad companies, with even less than this sum, and have succeeded in a few years in making themselves independent. Farming in the eastern states now requires a large amount of capital to be invested, and to use that capital with profit, requires a large amount of skill and experience. In the west, small capital used with caution, an aptitude to learn, and patience, perseverance, and sometimes long suffering with difficulties, all in the end accomplish the same results as money and practical skill in the east.

Sheep Farming.—"Chicago." To keep a flock of pure bred Cotswold, South-down, or Leicester sheep, requires skill, experience, capital, and a location fitted for raising the needed root and fodder crops. It is easier to keep a flock of grades of either South-downs or Cotswolds. There is more profit in keeping sheep on cheap land 500 miles from market, as the prairies of Kansas or Nebraska, than on high priced land 100 miles from Chicago. Sheep farming as a special business can not afford to pay $50 to $100 an acre for land; the difference in the price of land would pay the small difference in freight many times over. Besides, a small flock alone will not pay for the necessary attention, which could as well care for a flock of 1,000 or more, as one of 200.

Prolific Sheep.—"Shepherd." A ewe may live and breed 14 or 15 years. Merinos are longer lived than the large breeds. An English breed, known as Dorset, is probably the most prolific kind of sheep. A flock of 400 is mentioned, that last year brought to maturity 515 lambs. 115 pairs of twins were raised without the loss of a ewe, and the twins were as forward lambs as the singles. A cross bred Cheviot ewe is recorded as having in 15 years produced 30 lambs, 3 singles, 9 doubles, and 3 triplets. This last is the most prolific sheep we have heard of, but to get a whole flock of such ewes, would be an impossibility.

Illinois State Farmers' Association.—We are indebted to W. C. Flagg, President of the Illinois State Farmers' Association, for a copy of the Proceedings of the third annual meeting. Of the various addresses, of which full reports are given, that of the President is of especial interest. He describes the formation, management, and benefits of a local farmers' club, with which he is personally connected, and the practical hints given in his address, will be found of great value. The report is published in pamphlet form, and a number of them have been printed for sale, for the double purpose of adding to the resources of the association, and of popularizing its objects. Copies can be procured of the Secretary, S. M. Smith, Kewanee, Henry county, Illinois.

Colic in Horses.—"W. W. L.," Before one can treat colic in horses successfully, or even intelligently, the cause should be known. It may be due to indigestion, improper feeding or watering, to inflammatory condition of the intestines, or to worms. The last named is a frequent but unsuspected cause. A case is known in which a horse which died of supposed colic, was found to have over 1,200 worms in his intestines. Worms not only cause spasmodic inflammation when numerous, but gathering in knots, sometimes cause actual stoppage. In your case the hide bound, thriftless appearance, and foul appetite of the horse, would all point to worms as the cause of the trouble. If worms are present, the horse may probably be relieved by giving 2 ounces of spirits of turpentine in a pint of linseed oil, repeating the dose in 10 days, or give in the food for three successive mornings, half a dram each of calomel and tartar emetic, and after this a pint of linseed oil. If the horse is valuable, consult a veterinary surgeon always, but rather trust to your own judgment, than employ a quack horse-doctor.

"Walks and Talks" Correspondence.

Preserving Shingles.—"S. A. B.," asks if he can "profitably use anything to prepare cut shingles before laying, so as to make them more durable."—I think it would pay to saturate them with petroleum. If this is not convenient, apply the petroleum two or three times after they are laid. Take a small watering-can, stand on top of the roof, and sprinkle the petroleum over the shingles, and let a man at the same time stand on a ladder or platform at the eaves, and any petroleum that runs into the gutter, can be applied with a brush to the shingles below the gutter. If the weather is warm, and the shingles dry, the petroleum will be absorbed rapidly, especially at the ends and sides of the shingles. You will probably have to do part of the work yourself. I have rarely found a man who knew how to get enough petroleum into the wood.

Sick Pigs.—"A. C.," Wis., has a litter of seven pure-bred Poland-China pigs, four months old, that are sick. They are "troubled with wheezing and short breath. They are in good condition. Have a warm, dry nest, plank floor, stone walls, crib overhead, and yard attached. Food, corn-meal and oats ground. Also dry corn and dish-water from the house."—This is high feeding for such young pigs, and they will probably not stand it as well as the smaller breeds which mature early. I should stop the dry corn, and give bran or middlings instead of the corn-meal. Let them have plenty of exercise, and if possible the run of a clover or grass pasture.

Oats and Peas.—"G. T." I have no trouble in harvesting or threshing this mixed crop. A Johnston reaper will cut them up clean, no matter how badly they may be lodged. The machine rakes them off into bunches. If the weather is fine, and likely to continue so, we turn these bunches the next day, and as often as is necessary. In two or three days the crop will be sufficiently cured to draw in. We open a way for the wagon by throwing two rows of bunches one on each side of the wagon; and then two men, one on each side, pitch the bunches on to the wagon. This is far better than putting them into cock. If well cured, the straw makes excellent fodder. We have no trouble in threshing. I believe the "threshers" grumble a little, but they always want my job the next year, and so I suppose they find no real difficulty. We thresh with a ten-horse power machine, and as I use the straw for fodder, I am not particular about knocking out every oat, and so we lower the concave, and the crop goes through lively, and very few of the peas are crushed. A good fanning mill will separate nearly all the peas from the oats.

Feeding Wheat to Horses.—"G. B.," of Nebraska, writes: "At your suggestion I boiled my wheat, and scattered it while hot over my chopped hay and straw. I think I fed my wheat to better advantage than most of my neighbors, and better also for your advice. I wet the hay and straw before adding the boiled wheat."

Western Farming.—"G. B.," of Nebraska, also says, "I have 200 acres, and shall put in 110 acres of wheat, 30 oats, 40 corn, 10 barley, 5 rye, and 5 millet. I have three teams and the necessary machinery. Notwithstanding grasshoppers, and all other drawbacks, I believe farming will pay here if a man will only stick to it and farm understandingly. This country is adapted for wool growing, but farmers are so poor they cannot buy sheep. I hoped to have had some before this, but last year will put me back at least two years. If I have a good crop I shall be able to get some this fall."—I sincerely hope you will have a good crop. You certainly need more stock. Two hundred acres, and *all* in grain, may be best for a few years, until you get a good start, but your aim must be to keep more cattle, sheep and swine. If a farmer raises his own stock, very little capital is required; a few sows, or ewes, or cows, in three or four years, will give you more stock than your farm can carry. The great thing is to make a beginning.

Combing Wool.—A large wool dealer in Philadelphia, who examined my flock of sheep last winter, writes me that my pure-bred Cotswold wool, well washed, so as to shrink not more than 16 per cent, would be worth in that city 65 cts per lb., while my grade Cotswold-Merino wool would be worth 70 cents per lb. Clothing wool of same quality would be worth 56 cents. "If you were here," he writes, "I could take you to the wool dealers, and show you hundreds of thousands of pounds of wool, ranging in value from 15c. to 35c. per lb.; but of this choice, grade Cotswold-Merino wool, you could not find a single pound, and yet in your "Walks and Talks," No. 100, you compliment farmers on being intelligent men! I will not discuss this point, but I think that farmers, as a class, are very much in need of information in connection with their business."—All this sounds very well. And I feel quite sure that my correspondent means all he says. There doubtless is a growing demand for choice combing wool, and it probably does seem strange to the dealers and manufacturers, that intelligent farmers do not grow more of it. But when I take my wool to market, I do not hear so much about the scarcity of my kind of wool! I have never yet been able to get these high prices. I once sent my whole clip to a large house in New York. Prices were nearly as high then as they are now, and yet I did not get over 35 cents per lb. for the unwashed Cotswold wool, and I think 32 cents per lb. for unwashed Merino. I will not say whether we farmers are intelligent or not, but we certainly do need "more information on this part of our business." Joking aside, however, I suppose it to be a fact that combing wool is very scarce, and that those of us who grow a good article, will sooner or later get a fair price for it. I suppose, too, that much of our wool which ought to pass for combing, is not up to the desired standard. It may be long enough, but it is cotted, or hairy, or breaks in the middle—owing to great and sudden change in the feeding or management of the sheep. I am sure that we *can* raise all the choice combing wool required in this country, and raise good mutton at the same time.

Clover Hay for Pigs.—"J. R." I can only repeat what I have before said, that my breeding sows kept in good condition for six or eight weeks last winter, on clover hay, soaked in water and mixed with a little corn meal, and then steamed. The clover should be cut early, say the middle of June, or just as it comes into flower.

Curing Clover Hay.—"J. R." Early cut clover requires more time to cure than when the clover is not cut until it is in full blossom, and some of the heads turned brown. Neither will the early cut yield as much hay per acre. I would cut a little of it early, for pigs, milch cows, and ewes suckling lambs. The main crop I would let stand until in full blossom. The latter I cure as follows: I start two mowing machines in the afternoon, and keep them cutting until dark. The next morning, as soon as the dew is off, or as soon as the first cut clover is partly cured on top, a boy goes over it with a self-lifting wire horse-rake, and pulls it up into light windrows about six feet apart. In an hour or so these windrows are turned and shaken out again where necessary. If the crop is heavy and green, it may be necessary to go over it again with the rake, and also turn it again. About 4 o'clock we rake it into large windrows, and put it into cock. Sometimes we let it remain in cock for two or three days, until cured; but usually we open the cocks the next morning, and spread out the greenest of the hay, and if necessary turn it an hour or two later, and draw into the barn or stack in the afternoon. The real point is to avoid exposing the hay to the dew or rain after it is partially or wholly cured. *When green* a heavy dew, or even rain, hurts it but little if any; while such a dew would seriously injure partially cured hay. It is for this reason that I commence cutting in the afternoon, and let the grass lie exposed all night; but the next night we are careful to get it all into windrow or cock. These are the main outlines of my plan; but the details vary according to the weather and other circumstances. If I was sure of the weather, I would let the hay remain in the cock until ready to draw in. At any rate, let it be well cured, and especially be careful not to draw it in when there is any dew on it. If you *must* draw it in when damp from rain or dew, sprinkle a little salt on each layer as you put it in the barn—say two or three quarts to a ton.

Are there Two Varieties of Essex Pigs?—"F. H. H.," Aurora, Ill., writes, "I am breeding Essex hogs. I got my stock from reliable men. I believe them to be full-blood Essex; but they are not like yours. I saw recently at Downers' Grove, three Essex pigs raised by you. They are as fine-boned as the Suffolks. Mine are longer legged and coarser. Now are there not two varieties of Essex pigs in this country, one kind fine and short-legged, the other coarser and longer-legged?" I have aimed to get my pigs fine-boned, with short legs and short noses. You can breed them coarse or fine. It can be done by selection and by feed. High feeding when young, has a tendency to make the head, ears, and legs small. I do not think there are two distinct varieties of Essex. But in the hands of different breeders, there is much difference in the form and size. I could easily breed Essex large enough to dress 500 lbs. In fact, I had one that dressed 550 lbs. But I prefer them smaller and finer.

Does Tillage Enrich the Land.—"F. M.," Innerkip, Ontario, thinks such is the case, and I very decidedly agree with him. But it may require some years before we see a decided effect. Much depends on the character of the soil. The clays receive the greatest benefit from thorough tillage. No one would think of fallowing a blowing sand. Mr. F. M. calls my attention to a statement repeatedly made by a farmer in my neighborhood, to the effect that in plowing land repeatedly to kill Canada thistles, the soil was so impoverished, that it would not afterwards grow a crop without manure. I have noticed the same thing on my own farm, where I have plowed out stones on sandy knolls—plowing deep, and going round and round the knoll several times. These knolls will not produce good crops after such deep and repeated plowings, without manure—and they would not produce a good crop before, with or without manure. There is little necessity for cautioning farmers on good strong soil, against working their land too much. It may be true that many farmers plow too much land, but certainly few of us plow our land enough.

Swine Raising in the South.—"I think," writes a correspondent at Canton, Miss., "it is easier to grow swine here, than with you. Our winters are so mild, that housing is rarely necessary. I never allow sows to pig in winter. My plan is to have my pigs come the last of February, or early in March, and in September. Everything is then killed or sold, except brood sows, in November and December. My sows in winter, except in bad weather, are kept on orchard grass, and fed corn every night. By farrowing time we have clover as well as grass. In early summer they have the run of my orchard, and keep perfectly fat on fruit and Bermuda grass, without corn. A little later the early pea patches are added to the fruit and grass. Afterwards corn fields with late peas and sorghum cane, bring them to the pen in almost a perfect state. Sorghum is one of the finest and cheapest swine food in the world."—This is a cheap way of producing pork, though I should have thought that it would be better to keep the pigs to an older age on this cheap food, before shutting them up to fatten. Young pigs to grow rapidly, must be fed on rich and easily digested food.

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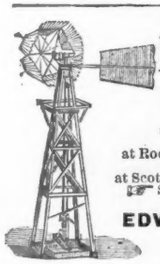

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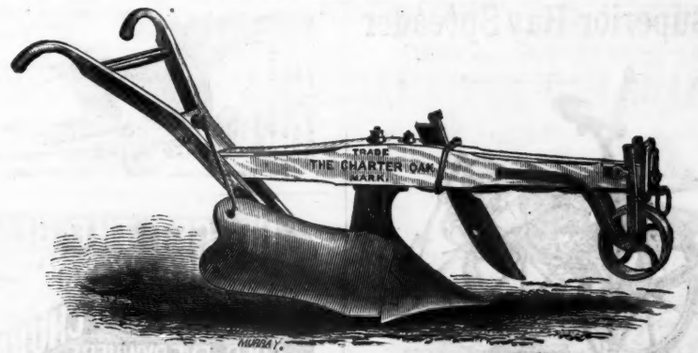

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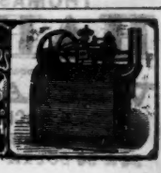

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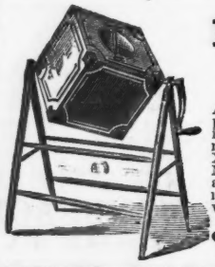

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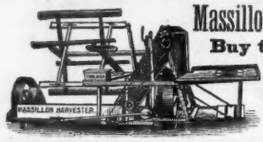

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GENTLEMEN:—The report having been made that Webster's English Dictionary is adopted as the standard by national officers, to the exclusion of Worcester's, I take occasion to say that so far as the Library of Congress is concerned, Webster has never been followed in orthography in printing its catalogues, reports, or any other documents. On the contrary, wherever proofs from the Congressional Printing Office embody the innovations upon English orthography which Webster introduced, they are invariably returned with corrections restoring the established spelling, as represented by Worcester and the usage of all great English writers. Very Repectfully,

A. R. SPOFFORD,
Librarian of Congress.

SUNNYSIDE, June 25, 1851.

DEAR SIR;—Several months since I received from Messrs. G. & C. Merriam a copy of their quarto edition of Webster's Dictionary. In acknowledging the receipt of it, I expressly informed them that I did not make it my standard of orthography, and gave them my reasons for not doing so, and for considering it an unsafe standard for American writers to adopt. At the same time I observed the work had so much merit in many respects, that *I made it quite a vade-mecum.* They had the disingenuousness to extract merely the part of my opinion which I have underlined, and to insert it among their puffs and advertisements, as if I had given a general and unqualified approbation of the work. I have hitherto suffered this bookseller's trick to pass unnoticed; but your letter obliges me to point it out, and to express my decided opinion that Webster's Dictionary is **NOT** a work advisable to be introduced "by authority" into our schools as a standard of orthography.

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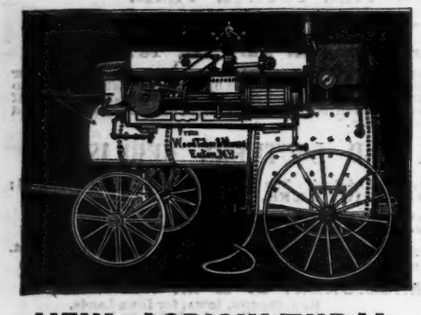

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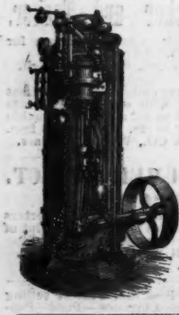

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